

LA-UR-

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Title:

Author(s):

Submitted to:

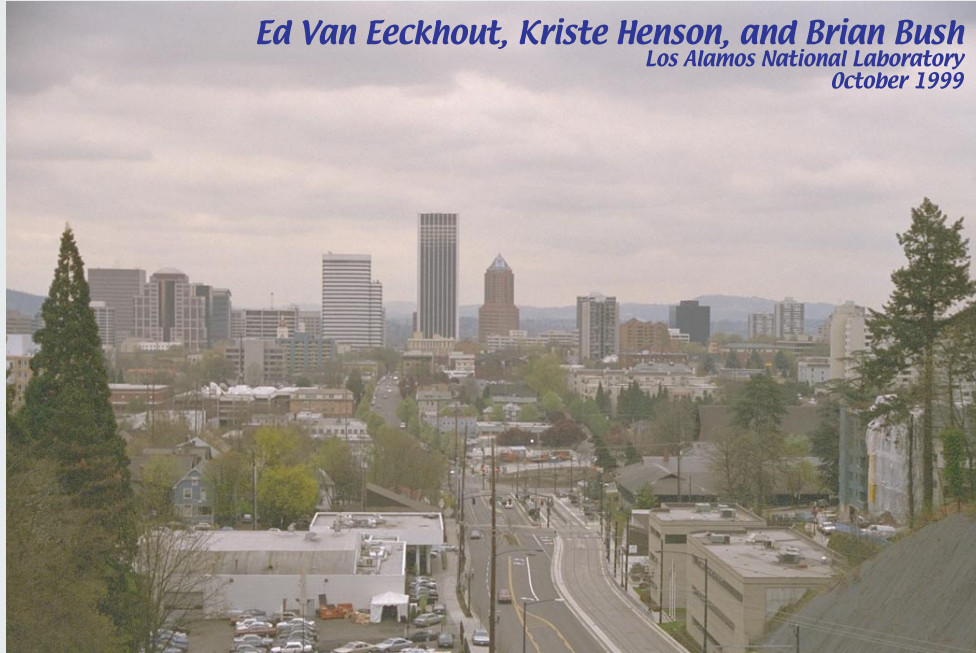
Los Alamos

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The TRANSIMS Data Files . .

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Los Alamos National Laboratory
October 1999



<http://transims.tsasa.lanl.gov/>

We have received a bit of data from Portland:

Updates on the data! . . example of internal web site earlier this year . .

Traffic Count Summaries: Average Weekday & Peak-Hour Volumes for Metro Cutline Locations: 1986, 1988, 1990, 1992, 1994 (dated Oct 1995), scanned 12 Jan 1999, pdf_file (4.68 M), zip file w/ two excel files of same data (0.18 M) (rec'd Feb 1999)

Cutline Location Map: lower resolution (can only make out locator symbols), higher resolution (can make out street names)--I have the original in my office

C-TRAN raw transit data rec'd 24 Nov 98 (data is in pdx1 under 99_orig_data_metro/981124_C-TRAN)

368114 Nov 24 08:33 stpdst.dbf
760493 Nov 24 08:33 stpmst.dbf
154448 Nov 24 08:33 tt.wkd.txt
for further info, see the C-TRAN web site

METRO update release of 18 Nov 98--data is in pdx1 under 99_orig_data_metro/981118a_metro--here is a file listing:

size . . . date . . . file name . . .
63617 Nov 18 nov17phase.dbf
65824 Nov 18 nov17phase.shp
18892 Nov 18 nov17phase.shx
2049012 Nov 18 nov17stops.dbf
230547 Nov 18 nov17stops.sbn
11844 Nov 18 nov17stops.sbx
659484 Nov 18 nov17stops.shp
188499 Nov 18 nov17stops.shx
318760 Nov 18 nov18sig.dbf
54812 Nov 18 nov18sig.shp
15732 Nov 18 nov18sig.shx
10134166 Nov 18 pkglinks.dbf
37234301 Nov 18 pkgpts.dbf
13539752 Nov 18 pkgpts.shp
3868539 Nov 18 pkgpts.shx
1053557 Nov 18 tranpath.dbf

METRO update release of 2 Nov 98 (71k pdf file; email)

METRO update release of 20 Oct 98 (91k pdf file; email)

METRO update release of 8 Oct 98 (15k pdf file; email)

METRO data release of 2 Oct 98 (146k pdf file: word doc)

description of allstr and transit data rec'd from METRO in May, 1998 (146k pdf file)

description of the stopfile transit data received on 5 June (51k pdf file)--stopfile.dbf file located in path */pdx1/transit/route*



And have stored various versions on hard disk and cd's:

There are 5 storage locations for the Portland data: pdx1 thru 5, which can be accessed under /home/projects/transims:

listing of pdx1: tables for simulation (00* and 000*) and working data (the rest) files

```
2,565 megs used 969 free 73%
drwxrwxrwx 2 emvan staff 1024 Sep 15 13:46 000.emme2_tables/
drwxrwxr-x 10 emvan staff 512 Sep 14 12:43 00_allstr_tables/
drwxrwxr-x 2 emvan staff 1024 Dec 14 1998 01_allstr_arview/
drwxrwxr-x 2 emvan staff 1024 Dec 1 1998 02_pkg/
drwxrwxr-x 9 emvan staff 512 Aug 23 08:16 03_transit/
drwxrwxr-x 2 emvan staff 512 Dec 1 1998 04_pocklanes/
drwxrwxr-x 2 emvan staff 512 Mar 3 1999 05_stop/
drwxrwxr-x 4 emvan staff 512 Aug 10 15:30 06_sig/
drwxrwxr-x 2 emvan staff 512 Mar 11 1999 07_phase/
drwxrwxr-x 2 emvan staff 512 Sep 1 11:18 08_activity/
drwxrwxr-x 2 emvan staff 512 Mar 3 1999 09_sign_inv/
drwxrwxr-x 2 emvan staff 512 Mar 3 1999 10_tmprhb/
drwxrwxr-x 2 emvan staff 512 Mar 11 1999 49_misc/
drwxrwxr-x 3 emvan staff 512 Mar 22 1999 98_traffic_count/
```

listing of pdx2: GIS data from Portland and Clark Co. & emme2 manual

```
1,217 megs used 2,317 free 35%
drwxr-xr-x 3 emvan staff 512 Jul 7 1998 clark_gis/
drwxrwxr-x 2 emvan staff 2048 May 3 09:02 e2book/
drwxr-xr-x 11 emvan staff 512 Jul 7 1998 rlis_lite/
drwxr-xr-x 3 emvan staff 512 Jul 7 1998 rlis_lite_pro/
```

listing of pdx3: auxiliary data

```
1,218 megs used 2,315 free 35%
drwxrwxr-x 19 emvan staff 512 Aug 30 10:44 99_orig_data_metro/
drwxr-xr-x 2 emvan staff 512 Jun 3 1998 usgs_quads/
```

listing of pdx4: orthophotos for Clack & Wash Cos.

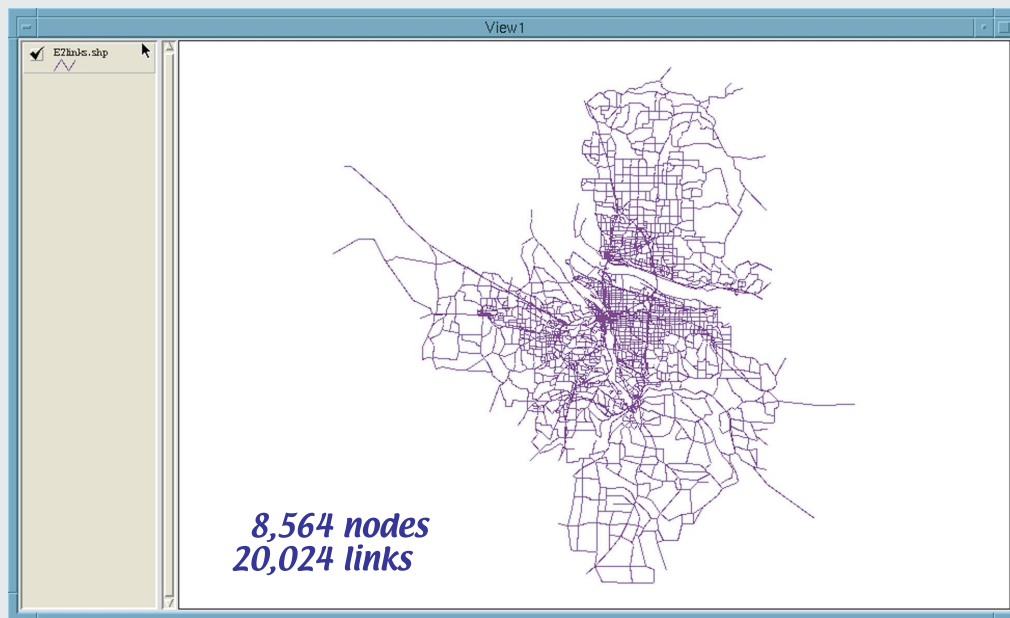
```
3,079 megs used 455 free 88%
drwxrwxr-x 2 emvan 1536 Jun 3 13:42 clack_co/
drwxrwxr-x 2 emvan 2048 Jun 2 17:24 wash_co/
```

listing of pdx5: orthophotos for Clark & Mult. Cos.

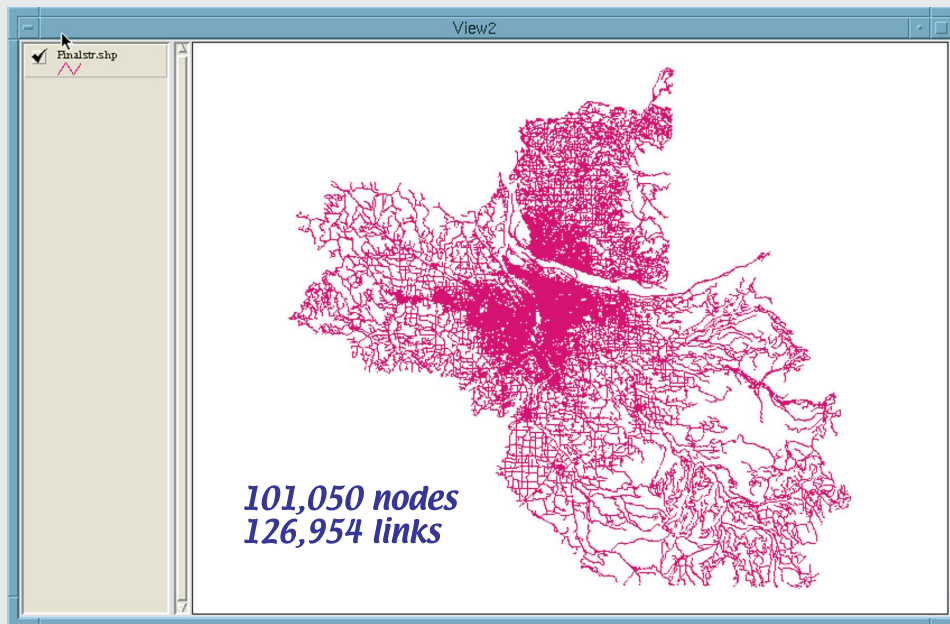
```
3,355 megs used 179 free 95%
drwxr-xr-x 2 emvan 24576 Jul 15 07:44 clark_co/
drwxr-xr-x 2 emvan 2048 Jul 13 10:09 mult_co/
```



the emme2 network:



the allstr network:



allstr release from METRO . .

Attributes of Allstr-shp																								
Shape	Frome	Toode	Locdy	Fixdy	Length	Allstr	Allstr_id	Locall	Frome	Thye	Fidst	Leftidst	Leftidst	Rightidst	Rightidst	Zposet	Zposet	Type	Drect	Locuety	Locuety			
PolyLine	7940	7626	0	0	2000.05403	1	1	219310	NW	BACONA	RD	35601	35999	35600	35998	97113	97113	1500	1	WASH	WASH			
PolyLine	7940	7614	0	0	707.02996	2	2	219311				0	0	0	0	97113	97113	1500	1	WASH	WASH			
PolyLine	8590	7658	0	0	4982.47686	3	3	219312	NW	CAPEHORNI	RD	34301	35999	34300	35998	97064	97064	1500	1	WASH	WASH			
PolyLine	8673	8152	0	0	3400.35035	4	4	219313	NW	JABOLINSKI	RD	34201	35199	34200	35198	97064	97064	1500	1	WASH	WASH			
PolyLine	8673	8590	0	0	468.30551	5	5	219314	NW	JOHNSON	RD	54500	54598	54501	54599	97064	97064	1500	1	WASH	WASH			
PolyLine	8743	7606	0	0	6459.76967	6	6	219315	NW	VERNONIA	RD	34301	35999	34300	35998	97064	97064	1500	1	WASH	WASH			
PolyLine	8832	7704	0	0	5587.41547	7	7	200002	NW	HWY 47		34001	35999	34000	35998	97064	97064	1400	1	WASH	WASH			
PolyLine	8832	8673	0	0	6987.87007	8	8	219316	NW	JOHNSON	RD	51000	54498	51001	54499	97064	97064	1500	1	WASH	WASH			
PolyLine	9117	8743	0	0	2780.80368	9	9	219317	NW	VERNONIA	RD	33801	34299	33800	34298	97064	97064	1500	1	WASH	WASH			
PolyLine	9192	7940	0	0	5870.81204	10	10	219318	NW	BACONA	RD	34001	35999	34000	35998	97113	97113	1500	1	WASH	WASH			
PolyLine	9204	9117	0	0	4041.63944	11	11	219319	NW	VERNONIA	RD	33301	33799	33300	33798	97064	97064	1500	1	WASH	WASH			
PolyLine	9204	7495	0	0	13499.34522	12	12	200003		SUNSET	HWY	60500	64998	60501	64999	97144	97144	1200	1	WASH	WASH			
PolyLine	8590	8743	0	0	13078.81729	13	13	219320	NW	JOHNSON	RD	54400	58498	54401	58499	97064	97064	1500	1	WASH	WASH			
PolyLine	9279	9204	0	0	371.38895	14	14	224335	NW	TIMBER	RD	27901	27999	27900	27998	97144	97144	1500	1	WASH	WASH			
PolyLine	9487	9204	0	0	4059.40250	15	15	200004		SUNSET	HWY	59300	60498	59301	60499	97144	97144	1200	1	WASH	WASH			
PolyLine	9536	9117	0	0	2269.86799	16	16	219321	NW	OLD VERNONIA	RD	33001	33399	33000	33398	97064	97064	1500	1	WASH	WASH			
PolyLine	9536	9487	0	0	443.25628	17	17	200005		SUNSET	HWY	59100	59298	59101	59299	97144	97144	1200	1	WASH	WASH			
PolyLine	9541	9487	0	0	276.36757	18	18	219322	NW	HULBERT	AVE	32401	32499	32400	32498	97144	97144	1500	1	WASH	WASH			
PolyLine	9541	9493	0	0	475.38076	19	19	219323	NW	BROAD	WAY	59200	59498	59201	59499	97144	97144	1500	1	WASH	WASH			

Attributes of Allstr-shp																								
Locdy	Polty	Locuety	Allocuety	Allocuety	Compdy	Modesty	Modesty	Speedt	Speedt	Locesty	Locesty	Funcnt	Funcnt	Caphtst	Caphtst	Edtcode	Stro	Side	Funcuety					
CO	CO	32700	32700			3		0	0	0.00	0.00	0	0	0	0	0	0	10	0	0				
CO	CO	32700	32700			5		0	0	0.00	0.00	0	0	0	0	0	0	10	0	0				
CO	CO	33400	33400			5		0	0	0.00	0.00	0	0	0	0	0	0	10	0	0				
CO	CO	33400	33400			4		0	0	0.00	0.00	0	0	0	0	0	0	10	0	0				
CO	CO	33400	33400			3		0	0	0.00	0.00	0	0	0	0	0	0	10	0	0				
CO	CO	33400	33400			5		0	0	0.00	0.00	0	0	0	0	0	0	10	0	0				
CO	CO	33400	33400			5		0	0	0.00	0.00	0	0	0	0	0	0	10	0	0				
CO	CO	33400	33400			3		0	0	0.00	0.00	0	0	0	0	0	0	10	0	0				
CO	CO	33400	33400			3		0	0	0.00	0.00	0	0	0	0	0	0	10	0	0				
CO	CO	32700	32700			4		0	0	0.00	0.00	0	0	0	0	0	0	10	0	0				
CO	CO	33400	33400			3		0	0	0.00	0.00	0	0	0	0	0	0	10	0	0				
CO	CO	33500	33400			3	cb	cb	55	55	1.00	1.00	1	1	3700	3700	1	10	0	1				
CO	CO	33400	33400			2		0	0	0.00	0.00	0	0	0	0	0	0	10	0	0				
CO	CO	33500	33500			4		0	0	0.00	0.00	0	0	0	0	0	0	10	0	0				
CO	CO	33500	33400			3	cb	cb	55	55	1.00	1.00	1	1	3700	3700	1	10	0	1				
CO	CO	33400	33400			5		0	0	0.00	0.00	0	0	0	0	0	0	10	0	0				
CO	CO	33500	33500			3	cb	cb	55	55	1.00	1.00	1	1	3700	3700	1	10	0	1				
CO	CO	33500	33500			4		0	0	0.00	0.00	0	0	0	0	0	0	10	0	0				
CO	CO	33500	33500			3		0	0	0.00	0.00	0	0	0	0	0	0	10	0	0				



status of the tables:

/home/projects/transims/pdx1/00_allstr_tables

gershwin.tsasa.lanl.gov{envan}7: dir

```
drwxrwxr-x 2 emvan staff 512 Aug 30 10:33 981210/
drwxrwxr-x 2 emvan staff 512 Aug 30 10:35 990205/
drwxrwxr-x 2 emvan staff 512 Aug 30 10:35 990305/
drwxrwxr-x 2 emvan staff 512 Aug 30 10:35 990328/
drwxrwxr-x 2 emvan staff 512 Aug 30 10:37 9907/
drwxrwxr-x 2 emvan staff 1024 Aug 30 11:25 9908/
drwxr-xr-x 2 emvan staff 1024 Sep 14 10:33 990830/
drwxrwxrwx 2 emvan staff 1024 Sep 14 14:00 990914/
```

/home/projects/transims/pdx1/00_allstr_tables/990914

gershwin.tsasa.lanl.gov{envan}9: dir

```
-rw-r--r-- 1 emvan staff 25219918 Sep 14 13:03 Activity_Location.tbl
-rw-r--r-- 1 emvan staff 44 Sep 14 10:38 Barrier.tbl
-rw-r--r-- 1 emvan staff 68 Sep 14 10:38 Detector.tbl
-rw-r--r-- 1 emvan staff 12996866 Sep 14 10:38 Lane_Connectivity.tbl
-rw-r--r-- 1 emvan staff 56 Sep 14 10:38 Lane_Use.tbl
-rw-r--r-- 1 emvan staff 15237951 Sep 14 10:39 Link.tbl
-rw-r--r-- 1 emvan staff 3446297 Sep 14 10:39 Node.tbl
-rw-r--r-- 1 emvan staff 38973413 Sep 14 10:39 Parking.tbl
-rw-r--r-- 1 emvan staff 48 Sep 14 10:39 Phasing_Plan.tbl
-rw-r--r-- 1 emvan staff 152462 Sep 14 10:39 Pocket_Lane.tbl
-rw-r--r-- 1 emvan staff 24 Sep 14 10:39 Signal_Coordinator.tbl
-rw-r--r-- 1 emvan staff 60 Sep 14 10:39 Signalized_Node.tbl
-rw-r--r-- 1 emvan staff 59 Sep 14 10:39 Speed.tbl
-rw-r--r-- 1 emvan staff 16 Sep 14 10:39 Study_Area_Link.tbl
-rw-r--r-- 1 emvan staff 82 Sep 14 10:39 Timing.tbl
-rw-r--r-- 1 emvan staff 582820 Sep 14 11:25 Transit_Plan.tbl
-rw-r--r-- 1 emvan staff 42981 Sep 14 10:39 Transit_Route.tbl
-rw-r--r-- 1 emvan staff 16267037 Sep 14 10:39 Transit_Schedule.tbl
-rw-r--r-- 1 emvan staff 445674 Sep 14 10:39 Transit_Stop.tbl
-rw-r--r-- 1 emvan staff 44 Sep 14 10:39 Turn_Prohibition.tbl
-rw-r--r-- 1 emvan staff 4452889 Sep 14 10:39 Unsignalized_Node.tbl
```



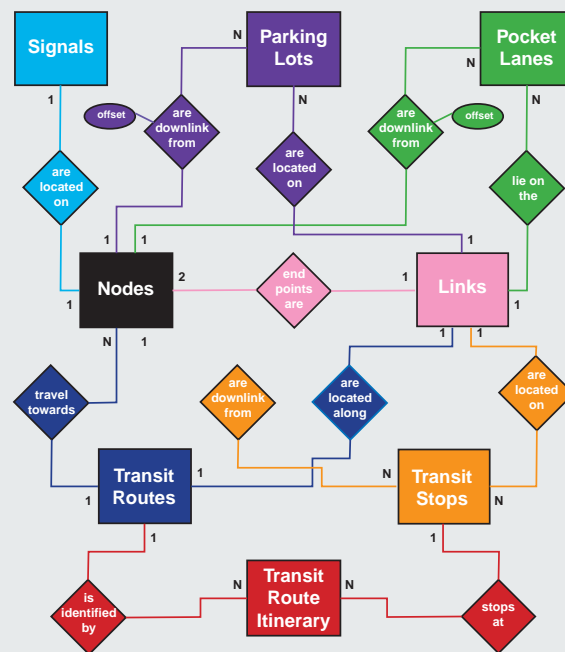
Table 23: Interdependencies between network tables.

Table	Tables on which it depends
Link	Node
Speed	Node, Link, Pocket Lane
Pocket Lane	Node, Link
Lane Use	Node, Link, Pocket Lane
Parking	Node, Link
Barrier	Node, Link, Pocket Lane
Transit Stop	Node, Link
Lane Connectivity	Node, Link, Pocket Lane
Turn Prohibition	Node, Link, Pocket Lane
Unsignalized Node	Node, Link, Pocket Lane
Signalized Node	Node, Timing Plan
Phasing Plan	Node, Link, Pocket Lane, Timing Plan
Detector	Node, Link, Pocket Lane
Signal Coordinator	Node, Signalized Node
Activity Location	Node, Link
Process Link	Parking, Transit Stop, Activity Location
Study Area Link	Link



*from: TRANSIMS-LANL-1.0-Files (Vol. 3),
May 1999, p. 48 of pdf file*

another way to look at the interdependencies: an entity relationship diagram



required vs optional tables . .

Date File	Pop. Synth.	Pop. Loc.	Veh. Gen.	Act. Gen.	Route Plan.	Traf. Micro.	Emis. Estim.
PUMS	E						
STF-3A	E						
MABLE	E						
Land Use	E						
Traveler Survey				E			
Nodes		E	E	E	E	E	E
Links		E	E	E	E	E	E
Speeds					0*	0	
Pocket Lanes						M	0
Lane Use					0*	0	
Parking					M	M	M*
Barriers						0*	
Transit Stops					0*	0	0*
Lane Connectivity					M*	M	
Turn Prohibition					0*	0*	
Unsignalized Nodes						M	
Signalized Nodes						0	
Phasing Plans						0	
Timing Plans						0	
Signal Coordinators						0	
Detectors						0	
Activity Locations		M	M	M	M	M	
Process Links					M	M*	
Study Area Links						M	
Transit Routes					0	0	
Transit Schedules					0	0	
Transit Vehicles					0	0	

KEY: E = essential

M = needed, but can be generated automatically

0 = optional, but used if supplied

* = not used by current TRANSIMS release, but will be used eventually

Note that the tables that are optional or that can be generated automatically may be essential for the realism needed for certain types of traffic planning studies. Also, additional techniques may become available for generating data in the optional tables (e.g., traffic controls).



software modules

standardized command file

standardized input/output interface requirements

several major modules already available

third-parties may replace or add new conforming modules

reusable C++ libraries for building TRANSIMS objects (network, plan, activity, and simulation output)

high-performance, parallel/distributed computing

simulation data files

well-documented text formats

interface library callable from C, C++, FORTRAN, etc.

data manipulation tools

filtering, sorting, indexing, merging, searching, summarizing, "noising"
or standard data files



TRANSIMS-LANL Documents

NOTE: *All* documents are presented in Portable Document Format (PDF). If you do not have the capability to read Adobe PDF documents, download a free copy of Adobe Acrobat Reader from Adobe Systems, Inc. *Some* documents are also available in Microsoft Word or in Postscript format.



The following is the structure of the TRANSIMS-LANL Document Set. Documents will be posted as they become available.

Volume 0: Overview ([pdf](#)) ([doc](#))

Volume 1: Framework (not available)

Volume 2: Software

Part 1: Modules ([pdf](#)) ([doc](#))

Part 2: Selectors ([pdf](#)) ([doc](#))

Part 3: Test Networks ([pdf](#)) ([doc](#))

Part 4: Tools (not available)

Part 5: Libraries ([pdf](#)) ([doc](#))

Volume 3: Files ([pdf](#)) ([doc](#))

Volume 4: Case Studies ([pdf](#))

Volume 5: Reprints/Preprints of Research Papers

1999 ([pdf](#))

1998 ([pdf](#))

1997 ([pdf](#))

1996 ([pdf](#))

1995 ([pdf](#))

Volume 6: Installation Guide ([pdf](#)) ([doc](#))

NOTE: We welcome your suggestions for improving the documentation. Please send comments to Jeanne Hurford, jmh@lanl.gov

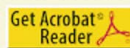


<http://transims.tsasa.lanl.gov/documents.html>



Documents

NOTE: *All* documents are presented in Portable Document Format (PDF). If you do not have the capability to read Adobe PDF documents, download a free copy of Adobe Acrobat Reader from Adobe Systems, Inc. *Some* documents are also available in Microsoft Word or in Postscript format.



June 1999 TRANSIMS [Opportunity Forum Visuals](#)

June 1999 TRANSIMS [Opportunity Forum Posters](#)

TRANSIMS-LANL Version 1.0 [June 1999 Documents](#)

TRANSIMS Interim Operational Capability 1 ([IOC-1](#)) Documents -- Dallas/Ft. Worth

Research/Publications

Research papers published as Los Alamos Unclassified Reports and categorized by year.

[1999](#)

[1998](#)

[1997](#)

[1996](#)

[1995](#)



Utility Programs . .

Lane Connectivity

gershwin.tsasa.lanl.gov{emvan}29: LaneConnectivity -h

USAGE: LaneConnectivity options

OPTIONS:

-h print help
-dd directory set data directory name
-dtn table set **node data table** name
-dtl table set **link data table** name
-dtp table set **pocket data table** name
> file export results to file
-s singlenod set singlenode output only

VALID OPTION COMBINATIONS:

-h print help
-dd -dtn -dtl > generate lane connectivity

gershwin.tsasa.lanl.gov{emvan}30:



Utility Programs . .

ValidateNetwork . . example output . .

Validating nodes . . .

. . . 0 fatal errors, 0 errors, 0 warnings

Validating links . . .

WARNING: Link id 224937 is 5.7668 times longer than its Euclidean distance. [record 5106]

WARNING: Link id 202885 is 37.0764 times longer than its Euclidean distance. [record 5129]

WARNING: Inconsistent functional class for link id 203721 at node id 48036. [record 5149]

WARNING: Link id 220008 is only 3.8 meters long. [record 5262]

WARNING: Link id 133618 is only 4.6 meters long. [record 126033]

. . . 0 fatal errors, 1 errors, 19151 warnings

Validating pocket lanes . . .

. . . 0 fatal errors, 0 errors, 0 warnings

Validating parking . . .

. . . 0 fatal errors, 0 errors, 2879 warnings

Validating transit stops . . .

. . . 0 fatal errors, 0 errors, 0 warnings

Validating lane connectivity . . .

ERROR: Lane number 4 does not exist for node id 10512 at outgoing link id 716283. [record 40605]

ERROR: Lane number 4 does not exist for node id 11181 at outgoing link id 716209. [record 43176]

ERROR: Lane number 3 does not exist for node id 13678 at outgoing link id 723282. [record 53073]

FATAL: Node id 37492 does not exist at incoming link id 106725. [record 176376]

FATAL: Node id 37492 does not exist at incoming link id 106725. [record 176378]

ERROR: Lane number 3 does not exist for node id 37930 at outgoing link id 200848. [record 179363]

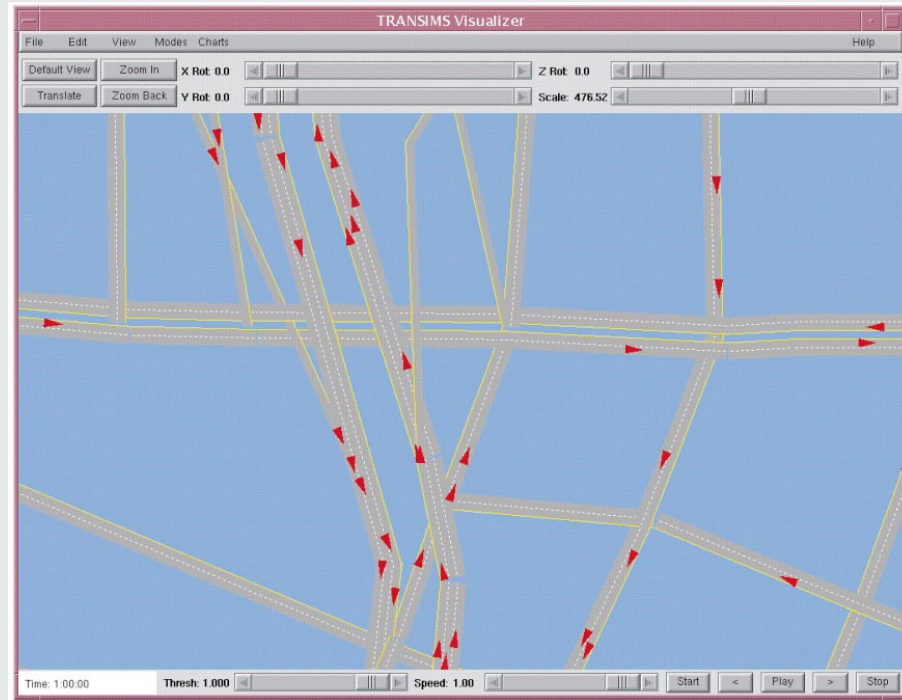
ERROR: Lane number 4 does not exist for node id 900103 at outgoing link id 104258. [record 520989]

ERROR: Lane number 2 does not exist for node id 900176 at outgoing link id 160955. [record 521148]

. . . **21 fatal errors**, 278 errors, 909 warnings



the Visualizer . .



Tools for cleaning up and creating TRANSIMS tables . .

*ArcInfo/ArcView
other GIS Products
programming languages . . C++, FORTRAN, JAVA, etc.
UNIX tools . . Sed, Awk, Perl
editors . . VI, EMACS, Microsoft word, BBedit, etc
spreadsheets . . EXCEL, others
Visualization*

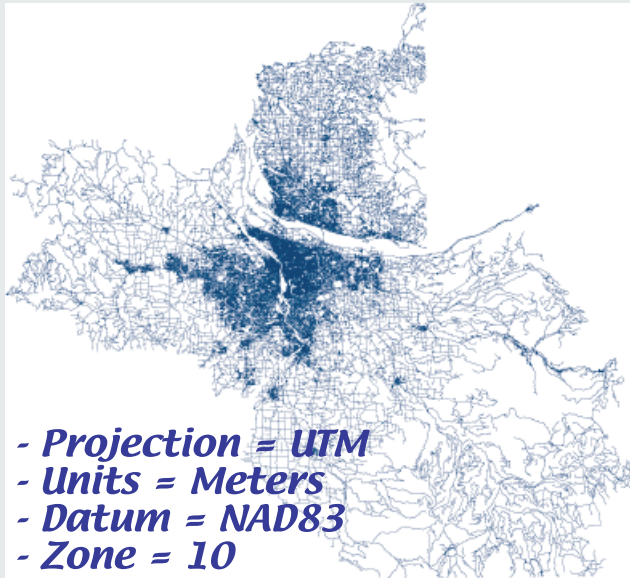
Multiple methodologies for performing these tasks . .

Can be very people intensive



Making the tables

Kriste Henson, Brian Bush,
and Ed Van Eeckhout



Nodes
Links
Lane Connectivity
Parking
Activity Locations
Process Links
Pocket Lanes
Transit
Vehicle File
Unsignalized Nodes
Signalized Nodes
Phases
Timing Plans
Detectors
Coordinators
Turn Prohibition
Speeds
Lane Use
Barriers



Nodes



Node Table

Description

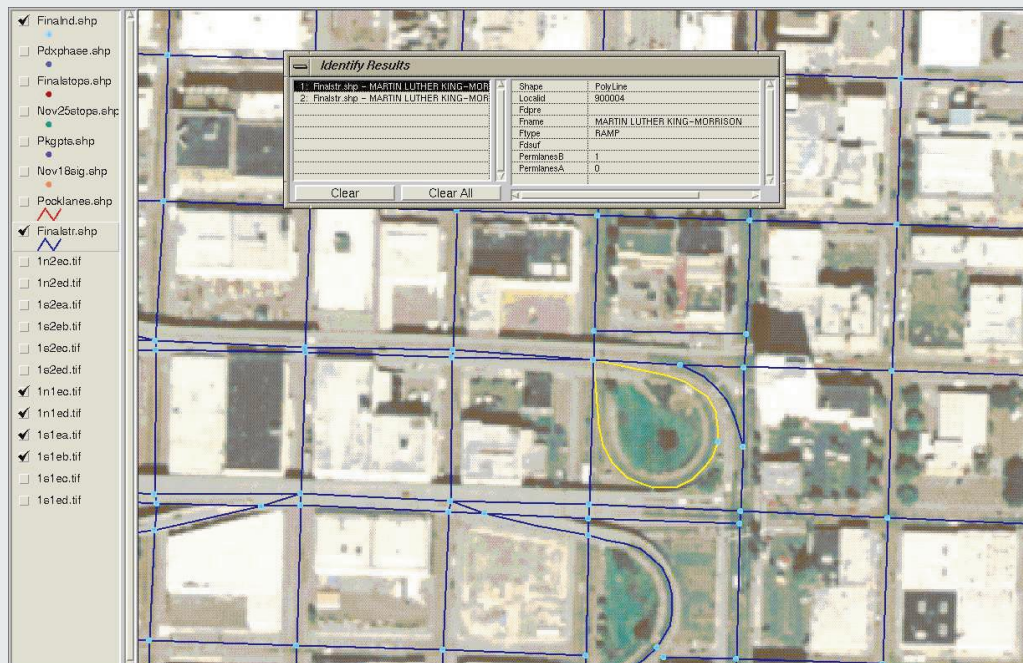
- Typically occur at intersections
- Must be present where:
 - network branches where
 - permanent number of lanes change
- Not required where turn pockets start or end
- Has a traffic control associated with it
- Underpasses and overpasses:
 - cannot share the same node
 - why? the two roads do not physically connect
 - common nodes must either be removed or split (same coordinates, different id numbers and elevation)

Fields

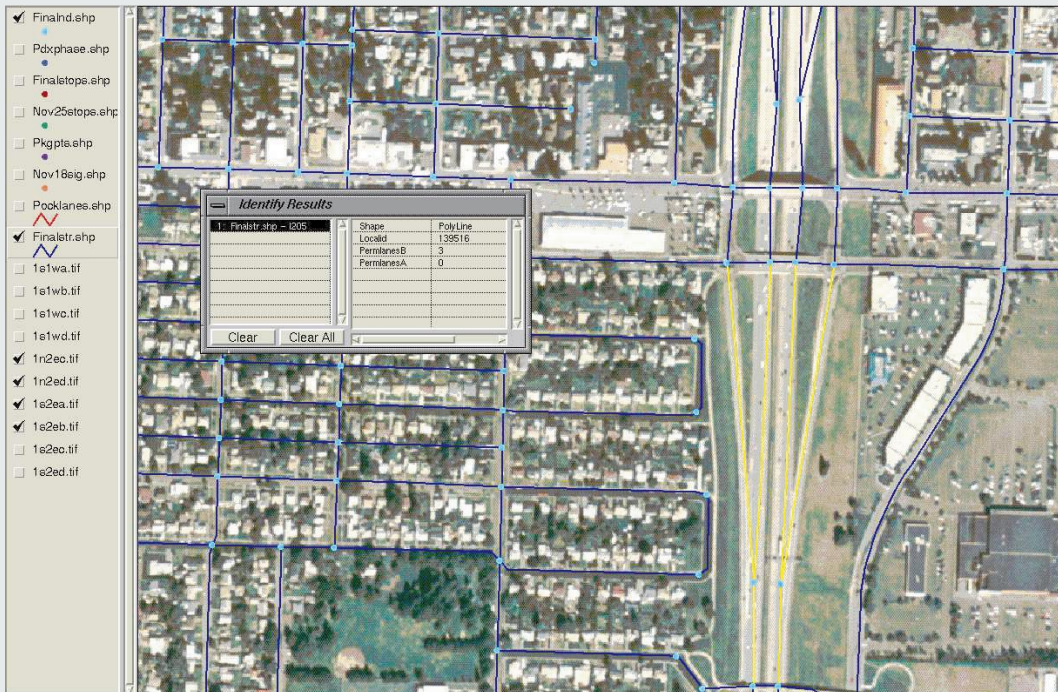
- ID: Node ID
- EASTING: X-coordinate
- NORTHING: Y-coordinate
- ELEVATION: Z-coordinate
- NOTES



Problem: Can't go back to same node



Problem: Underpass/overpass sharing node



Validation

- No nodes at the same X,Y coordinates can share the same elevation
- Nodes not attached to a link should be removed from the data table
- IDs are unique

Example

ID	EASTING	NORTHING	ELEVATION	NOTES
8520	3000	2500	1000	
8521	2000	1500	1000	
14136	3000	1500	1000	
14141	3000	4000	1000	
14142	3000	5000	1000	
14340	4000	4000	1000	
8525	3000	500	1000	
8522	2000	4000	1000	



Metro node table with multiple elevations

Attributes of May28elev.shp

Shape	Node_id	Elev	B_elev	B_link1	B_link2	B_link3	C_elev	C_link1	C_link2
Point	36502	20							
Point	36503	193	213	218422	218423	0			
Point	36504	111							
Point	36505	120							
Point	36506	112							
Point	36507	112							
Point	36508	112							
Point	36509	112							
Point	36510	20							
Point	36511	474							
Point	36512	112							
Point	36513	258							
Point	36514	89	109	105446	105584	0			
Point	36515	113							
Point	36516	191							



Comparison

METRO FIELD	TRANSIMS FIELD	COMMENTS
Node_id	ID	Unconnected nodes left in table
Elev	ELEVATION	Must be in meters
B_elev	***	
B_link1	***	
B_link2	***	
B_link3	***	
C_elev	***	
C_link1	***	
C_link2	***	
***	EASTING	Found using ArcView
***	NORTHING	Found using ArcView
***	NOTES	

Note: Only one elevation per link



Link Table

Description

- Represent street and road segments
- Lanes
 - are where traffic flows on a link
 - may have lanes in both directions
 - lanes in opposite directions may be on separate links (example: highways)
 - is permanent if it is not a pocket lane
 - numbering
 - * each link side is numbered separately
 - * leftmost lane is number one
 - * Each successive lane to the right is one greater
 - Two-way left-turn lanes are lane number zero

Fields

- ID: ID number of the link
- NAME: Name of the street
- NODE A: ID number of the Fnode
- NODE B: ID number of the Tnode
- PERMLANES A/B: Number of lanes towards Node A/B
- LEFTPCTS A/B: Number of pocket lanes heading towards Node A/B



ID	NAME	NODEA	NODEB	PERMLANESA	PERMLANESB	LEFTPCKTSA	LEFTPCKTSB
9704	2nd Street	8521	8523	2	2	0	0
9705	Avenue B	8521	8522	1	1	0	0
9706	Avenue B	8521	8524	1	1	0	0
11486	Avenue C	14141	14142	3	3	0	0
11487	3rd Street	8522	14141	3	6	0	0
11495	3rd Street	14141	14340	6	3	0	0
12384	Avenue C	14136	8520	4	4	0	1
12407	2nd Street	8521	14136	2	2	0	0
28800	Avenue C	8520	14141	3	4	0	1
28804	Avenue C	14136	8525	5	4	0	0
2759	1st Street	8525	8603	2	3	0	0
2750	Avenue D	8603	14340	2	3	0	0
2751	Avenue D	14340	8608	3	2	0	0
2752	4th Street	8608	14142	2	2	0	0
2753	4th Street	14142	8610	1	1	0	0
2755	Avenue A	8610	8600	2	2	0	0
2754	3rd Street	8600	8522	2	4	0	0
2756	Avenue A	8600	8606	3	2	0	0
2757	1st Street	8606	8524	2	2	0	0
2758	1st Street	8524	8525	2	2	0	0



Fields (cont)

- **RGHTRCKTS A/B:** Number of pocket lanes heading towards Node A/B
- **TWO WAY TURN:** Shows whether there is a two-way left turn lane
- **LENGTH:** Length of the link
- **GRADE:** Percentage grade from Node A to Node B
(Calculate: (Node B - Node A)/ Link Length)
- **SETBACK A/B:** Distance from the center of the intersection at Node A/B
- **CAPACITY A/B:** Total capacity
- **SPEEDLMT A/B:** Default speed limit for vehicles
- **FREESPD A/B:** Default free-flow speed for vehicles
- **FUNCTCLASS:**
 - Functional class of the link
 - If a link has more than one function class, use the most important
 - Types of function classes (in order of importance):
 - * **FREEWAY** = freeway
 - * **XPRESSWAY** = expressway
 - * **PRIARTER** = primary arterial
 - * **SECARTER** = secondary arterial
 - * **FRONTAGE** = frontage road
 - * **LOCAL** = local street
 - * **RAMP** = freeway ramp
 - * **OTHER** = other
 - * **WALKWAY** = walk only
 - * **BIKEWAY** = bicycle only
 - * **BUSWAY** = bus only roadway
 - * **LIGHTRAIL** = light rail only
 - * **HEAVYRAIL** = heavy rail



RGHTPCKTSA	RGHTPCKTSB	TWOWAYTURN	LENGTH	GRADE	SETBACKA	SETBACKB
0	0	F	1000	0	3	3
0	0	F	2500	0	6	12
0	0	F	1000	0	6	6
0	0	F	1000	0	13.5	6
0	0	F	1000	0	3	9
0	0	F	1000	0	18	6
0	1	T	1000	0	6	0
1	0	F	1000	0	3	12
0	1	T	1500	0	0	13.5
0	0	F	1000	0	6	6
0	0	F	1000	0	18	6
0	0	F	3500	0	6	13.5
0	0	F	1000	0	13.5	6
0	0	F	1000	0	6	9
0	0	F	2500	0	9	6
0	0	F	1000	-25	3	9
0	0	F	1500	16.7	6	3
0	0	F	3500	4.3	9	6
0	0	F	1500	6.7	6	3
0	0	F	1000	0	3	12



CAPACITYA	CAPACITYB	SPEEDLMTA	SPEEDLMTB	FREESPDA	FREESPDB	FUNCCLASS
800	1000	20	20	25	25	OTHER
800	1000	20	20	25	25	ZONECONN
800	1000	20	20	25	25	RAMP
800	1000	20	20	25	25	FRONTAGE
800	1000	20	20	25	25	SECARTER
800	1000	20	20	25	25	COLLECTOR
800	1000	20	20	25	25	FREEWAY
500	500	20	20	25	25	XPRESSWAY
800	1000	20	20	25	25	PRIARTER
800	1000	20	20	25	25	LOCAL
800	1000	20	20	25	25	LOCAL
800	1000	20	20	25	25	LOCAL
800	1000	20	20	25	25	LOCAL
800	1000	20	20	25	25	LOCAL
800	1000	20	20	25	25	LIGHTRAIL
800	1000	20	20	25	25	LOCAL
800	1000	20	20	25	25	LOCAL
800	1000	20	20	25	25	LOCAL
800	1000	20	20	25	25	LOCAL
800	1000	20	20	25	25	LOCAL



Fields (cont)

- **THRU A/B:** Default through link connected at node A/B
(Determined from a program)
- **VEHICLE:**
 - vehicle types (modes) allowed to use a link
 - multiple vehicle names should be separated by a slash (/)
 - types
 - * WALK = walking allowed
 - * AUTO = private auto
 - * TRUCK = motor carrier
 - * BICYCLE = bicycle
 - * TAXI = paratransit
 - * BUS = bus
 - * TROLLEY = trolley
 - * STREETCAR = streetcar
 - * LIGHTRAIL = light rail transit
 - * RAPIDRAIL = rail rapid transit
 - * REGIONRAIL = regional rail
- **NOTES**



Example

THRU A	THRU B	VEHICLE	NOTES
12407	9704	AUTO	
9706	11487	AUTO	
9705	2758	AUTO	
28800	2752	AUTO	
2754	11495	AUTO	
11487	2750	AUTO	
28804	28800	AUTO	
9704	12384	AUTO	
12384	11486	AUTO	
12384	2759	AUTO	
2758	2750	AUTO/BUS	
2759	2751	AUTO/BUS	
2750	2752	AUTO/BUS	
2751	2753	AUTO/BUS/ LIGHTRAIL	
2752	2755	LIGHTRAIL	
2753	2756	AUTO/LIGHTRAIL	
2755	11487	AUTO	
2755	2757	AUTO/LIGHTRAIL	
2756	2758	AUTO/LIGHTRAIL	
2757	2759	AUTO/BUS/ LIGHTRAIL	



Validation

- *IDs are unique*
- *The nodes at the endpoints exist*
- *There are different nodes for both endpoints (can divide links into more than one segment)*
- *There is a permanent lane associated with every pocket lane*
- *Link length is at least equal to the distance between the endpoints*
- *The length of the link is not far greater (e.g., 50% more) than the distance between its endpoints*
- *At least some types of vehicles are allowed on the link*
- *All nodes have at least one incoming and one outgoing link*
- *No modal sources or sinks*
- *No unwanted modal islands*
- *The name of a street doesn't contain any tabs*



Metro allstr attributes that were used

Shape	Fnode	Tnode	Length	Localid	Fidre	Fname	Ftype	Fdsuf	Modestf	Modestf	Speedtt	Speedtt	Laneest	Funcst	Funcst	Capltht	Capltht	Editcode	Funcass
PolyLine	9541	9493	475.38076	219323	NW	BROAD	WAY				0	0	0.00	0.00	0	0	0	0	0
PolyLine	9590	9536	423.07273	200006		SUNSET	HWY	cb	cb		55	55	1.00	1.00	1	1	3700	3700	1
PolyLine	9603	7717	10959.12840	219324	NW	PEBBLE CREEK	RD				0	0	0.00	0.00	0	0	0	0	0
PolyLine	9603	8932	6580.15950	200007	NW	HWY 47					0	0	0.00	0.00	0	0	0	0	0
PolyLine	9622	9590	222.56111	219325	NW	MIDWAY	DR				0	0	0.00	0.00	0	0	0	0	0
PolyLine	9622	9541	881.32061	224355	NW	BROAD	WAY				0	0	0.00	0.00	0	0	0	0	0
PolyLine	9707	9622	493.33724	224351	NW	MIDWAY	DR				0	0	0.00	0.00	0	0	0	0	0
PolyLine	9707	9541	1411.44247	224352	NW	HULBERT	AVE				0	0	0.00	0.00	0	0	0	0	0
PolyLine	9853	9707	598.71172	224353	NW	MIDWAY	DR				0	0	0.00	0.00	0	0	0	0	0
PolyLine	9898	9667	4295.45860	219330	NW	HOFFMAN	RD				0	0	0.00	0.00	0	0	0	0	0
PolyLine	9898	9590	1731.18641	200008		SUNSET	HWY	cb	cb		55	55	1.00	1.00	1	1	3700	3700	1
PolyLine	9898	9977	2668.39148	219331	NW	BACONA	RD				0	0	0.00	0.00	0	0	0	0	0
PolyLine	9982	9603	2700.25124	200009	NW	HWY 47					0	0	0.00	0.00	0	0	0	0	0
PolyLine	9977	9192	8586.23719	219332	NW	BACONA	RD				0	0	0.00	0.00	0	0	0	0	0
PolyLine	9667	9982	6596.56467	219333	NW	HOFFMAN	RD				0	0	0.00	0.00	0	0	0	0	0
PolyLine	10131	10016	1405.49123	222119							0	0	0.00	0.00	0	0	0	0	0
PolyLine	10016	10089	7524.34995	222117							0	0	0.00	0.00	0	0	0	0	0
PolyLine	10131	10213	1383.38931	222118							0	0	0.00	0.00	0	0	0	0	0
PolyLine	10295	10245	417.19825	222116							0	0	0.00	0.00	0	0	0	0	0



Comparison

METRO FIELD	TRANSIMS FIELD	COMMENTS
Fnode_	NODEA	Node table changes sometimes not included, Links has Node A = Node B
Tnode_	NODEB	
Lpoly_	***	
Rpoly_	***	
Length	LENGTH	Provided in feet
Allstr_	***	
Allstr_id	***	
Localid	ID	
Fdpre	NAME	Entire link name provided in four fields
Fname		
Ftype		
Fdsuf		
Leftadd1	***	
Leftadd2	***	
Rgtadd1	***	
Rgtadd2	***	
Zipcolef	***	
Zipcoorgt	***	
Type	***	
Drot	***	
Lcounty	***	
Rcounty	***	
Lcity	***	
Rcity	***	
Lcensus	***	
Rcensus	***	
Lblock	***	
Rblock	***	



Comparison

METRO FIELD	TRANSIMS FIELD	COMMENTS
Compdir	***	
Modesft	VEHICLE	More than one set of vehicle modes provided for one link
Modestf		
Speedft	SPEEDLMTB	
Speedtf	SPEEDLMTA	
Lanesft	PERMLANESB LEFTPCKTSB RGHTPCKTSB	Permanent, left pocket, and right pocket lanes all provided in one decimal number
Lanestf	PERMLANESA LEFTPCKTSA RGHTPCKTSA	Permanent, left pocket, and right pocket lanes all provided in one decimal number
Func1ft	FUNCTION	
Func1tf	FUNCTION	Two function classes provided for one link
Cap1hft	***	
Cap1htf	***	
Editcode	***	
Stru	***	
Side	***	
***	TWOWAYTURN	
***	GRADE	Can calculate from nodes X,Y coordinates
***	CAPACITYA	
***	CAPACITYB	
***	FREESPD A	Can assign based on speed limits
***	FREESPD B	Can assign based on speed limits
***	SETBACK A	Not necessary to run simulation
***	SETBACK B	Not necessary to run simulation
***	THRU A	Found from tool
***	THRU B	Found from tool
***	NOTES	

Note: Records were not complete. Most link information was left blank.



Lane Connectivity Table

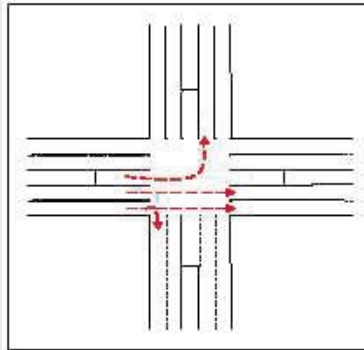


Definition

- Specifies how lanes are connected across a node
- Lanes are numbered from the median and include turn pockets
- Incoming and outgoing links and lanes are defined relative to the node
- For each incoming lane on an incoming link, at least one outgoing lane must be specified for each outgoing link that a vehicle on the incoming link can transition to
- Multiple outgoing lanes may be defined for an outgoing link

Validation

- Node, link, and lane references are correct
- Each lane has at least one incoming and at least one outgoing connection



Fields

- **NODE ID:** Number of the node
- **INLINK ID:** Number of the incoming link
- **INLANE Lane:** Number of the incoming lane
- **OUTLINK ID:** Number of the outgoing link
- **OUTLANE:** Lane number of the outgoing lane
- **NOTES**

Example

NODE	INLINK	INLANE	OUTLINK	OUTLANE	NOTES
14141	11487	1	11486	1	
14141	11487	2	11486	2	
14141	11487	3	11495	1	
14141	11487	4	11495	2	
14141	11487	5	11495	3	
14141	11487	6	28800	3	
14141	11486	1	11495	1	
14141	11486	2	28800	1	
14141	11486	3	28800	2	
14141	11486	3	11487	3	
14141	11495	1	28800	1	
14141	11495	2	28800	2	
14141	11495	3	11487	1	
14141	11495	4	11487	2	
14141	11495	5	11487	3	
14141	11495	6	11486	3	
14141	28800	1	11487	1	
14141	28800	2	11487	2	
14141	28800	3	11486	1	
14141	28800	4	11486	2	
14141	28800	5	11486	3	
14141	28800	6	11495	3	



Parking Table

Description

- used as origins and destinations for vehicle trips
- Shown on network:
 - where it is physically located in the network
 - as aggregate generic parking areas
- Location is determined from node, link, and offset.

Fields

- ID: ID number of the parking place
- NODE: ID number of the "to" node
- LINK: ID number of the link on which the parking place lies
- OFFSET: Location of the entrance of the parking place, measured from NODE
- STYLE:
 - * Type of the parking place
 - * Abbreviations:
 - PRSTR= parallel on street
 - HISTR = head in on street
 - DRVWY = driveway
 - LOT = parking lot
 - BNDRY = network boundary



Fields (cont)

- CAPACITY: Number of vehicles the parking place can accommodate
- GENERIC
 - Whether the parking place represents generic parking
 - Abbreviation
 - * T = true/yes
 - * F = false/no
- VEHICLE
 - Type of vehicle(s) allowed to park at the parking place
 - Types: Same format as previously noted
- STARTTIME:
 - Starting time for parking
 - Same format as previously noted
- ENDTIME: Ending time for parking
- NOTES

Example

ID	NODE	LINK	OFFSET	STYLE	CAPACITY	GENERIC	VEHICLE	STARTTIME	ENDTIME	NOTES
1001	8520	28800	400	LOT	50	T	AUTO	ALL00:00	ALL24:00	
1002	14136	12384	300	PRSTR	10	T	AUTO/TAXI	ALL00:00	ALL24:00	
1003	14136	12407	200	HISTR	10	T	ANY	ALL00:00	ALL24:00	
1004	8521	12407	200	DRVWY	1	F	ANY	ALL00:00	ALL24:00	
1005	8525	2758	370	LOT	1	F	BUS	ALL00:00	ALL24:00	
1006	14142	2752	650	LOT	0	F	ANY	ALL00:00	ALL24:00	



Metro Parking Tables

Attributes of Pkgpts.shp							
Shape	Source	Parking	Siteaddr	Reeno	Localid	Pkgside	Ptmatch
Point	20	2	35913 NW 41ST CT	27247	710792	R	3
Point	25	6	7635 N INTERSTATE AVE	27248	132780	L	1
Point	20	2	36400 NE 216TH AV	27249	719544	L	3
Point	25	4	7628-7634 N PENINSULAR AVE	27250	104009	R	1
Point	0	1		27251	135748	R	3
Point	0	10	2025 NE BROADWAY ST	27252	111710	L	1
Point	20	2	36505 NE LEWISVILLE HY	27253	710793	R	3
Point	25	4	7613-7615 N CURTIS AVE	27254	104005	L	1
Point	0	5		27255	111734	L	3
Point	20	2	36400 NE RIDGE VIEW DR	27256	720040	L	1
Point	25	18	7605-7611 N PENINSULAR AVE	27257	104009	L	1

pkglinks.dbf								
Localid	Offstrft	Offstrtf	Crbouttf	Crbouttf	Onstrft	Onstrtf	Pkgproft	Pkgprotf
636088	0	0	0	0	4	4		
636089	0	2	0	1	5	4		
136303	18	20	8	8	8	8		
136518	2	4	1	2	7	6		
636090	8	2	4	1	4	7	PM	AM
636091	2	0	1	0	1	2	PM	AM
161217	0	0	0	0	2	2		
161218	0	0	0	0	7	7		



Comparison

METRO FIELDS		TRANSIMS FIELD	COMMENTS
Parking Points	Parking Links		
Source	***	***	
Parking	Onstrft	CAPACITY	None, except had to combine all five fields into fone table
	Onstrtf		
	Offstrft		
	Offstrtf		
Siteaddr	***	***	
Reeno	***	ID	Generated for parking lots without IDs
Localid	Localid	LINK	
Pkgside	***	***	
Ptmatch	***	***	
***	Crbouttf	***	
	Crbouttf		
	Pkgproft		
***	Pkgprotf	STARTTIME/ ENDTIME	Assume no restrictions for off street parking, unless noted
***	***	TONODE	Points: Derived from link and pkgside Links: Derived from to- and from-links
***	***	OFFSET	Off street: Calculated based on X,Y, On street: Assume location
***	***	STYLE	Points: Derived from Source Links: Assume lots for off-street
***	***	GENERIC	Points assumed to be not generic and Links assumed to be generic
***	***	VEHICLE	Assume autos and bikes can park
***	***	NOTES	

NOTE: All parking locations were combined into one table



Validation

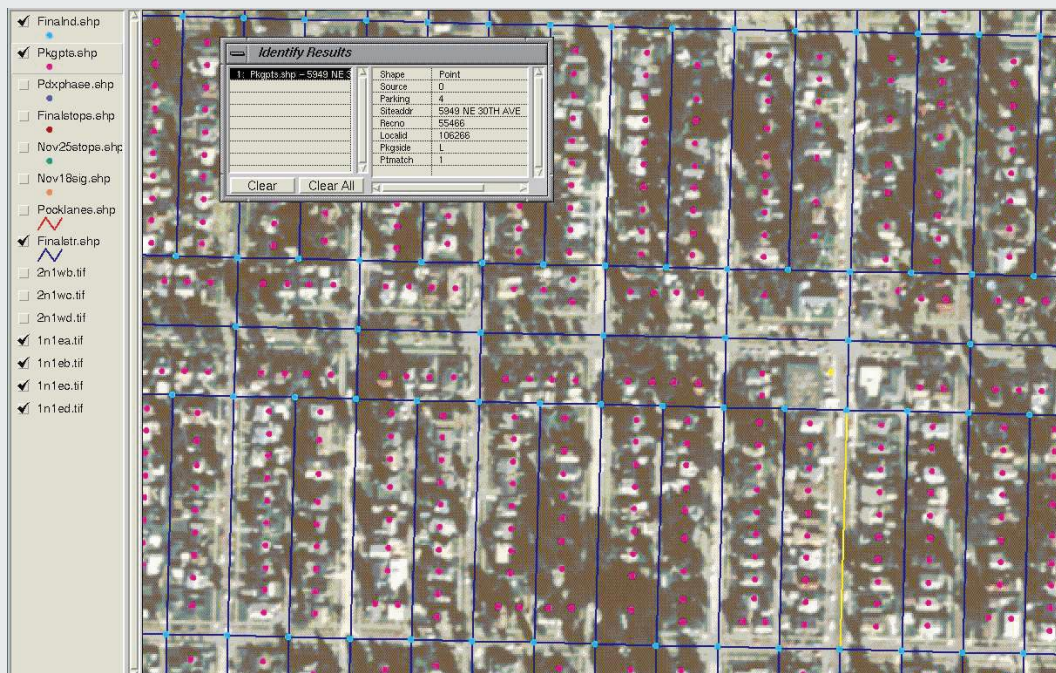
- *IDs are unique*
- *Node and link references must be correct*
- *Vehicle types allowed for the parking must be consistent with types allowed on the link*

Important Notes

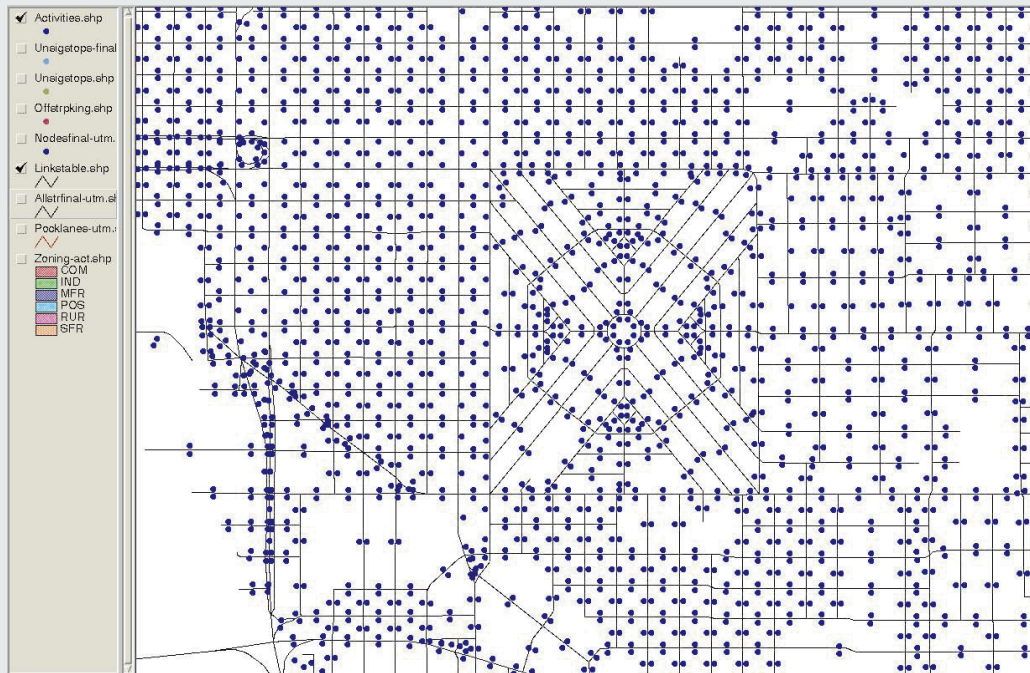
- *Show driveways and on-street parking as aggregate generic parking areas*
 - *one or two per link*
 - *allstr:*
 - * *463,661 of 483,517 parking locations are driveways*
 - * *All driveways are located on 82,930 links*
 - * *Can reduce number of parking lots by 4.7 times (new total = 102,786).*
- *Parking lots should not be placed on top of one another.*
- *Parking lots cannot be placed off the end of a link.*



Parking issues



Activity Locations



Activity Table

Definition

- *Is a place on a link where traveler activities can take place*
- *Activities can include work, home, and shopping*
- *Generally have one per link*
- *Location defined by node, link, and offset*

Fields

- *ID: ID number of the activity location*
- *NODE: ID number of the node toward which vehicles are traveling*
- *LINK: ID number of the link on which the activity location lies*
- *OFFSET: Location of the entrance from the link to the activity location, measured from NODE*
- *LAYER:*
 - *Is the modal "layer" on which the activity location resides*
 - *Types*
 - * *AUTO*
 - * *BUS*
 - * *LIGHTRAIL*
 - * *WALK*



Fields (cont)

- **EASTING:** The x-coordinate of the node
- **NORTHING:** The y-coordinate of the node
- **ELEVATION:** The z-coordinate of the node
- **optional field(s):** Optional field(s) related to land use
- **NOTES**

User-defined fields

- Can have fields besides those required by the simulation
- Can include up to 20 fields
- Names of must be unique within the table
- Examples include TAZ, Block group, etc.

Validation

- IDs are unique
- Node and link references are correct
- Offset is consistent with link length

Example

ID	MODE	LINK	OFFSET	LAYER	EASTING	NORTHING	ELEVATION	ACCESS	BOME	WORE	NOTES
53	0504	1786	100	JMTC	2000	700	1000	0.85	1.0	0.0	
24	0504	1507	000	SRJ5	0000	1500	1800	0.75	0.0	1.0	



Process Links

Definition

- Is a "virtual" connection between an activity location, parking place, or transit stop and another activity location, parking location, or transit stop
- Represents the process of changing modes and accounts for the cost (in time and money) of making a mode change
- Without these, simulated people could not change modes

Fields

- **ID:** ID number of the virtual link
- **FROMID:** ID number of the accessory from which the virtual link leaves
- **FROMTYPE:**
 - Type of accessory from which the virtual link leaves
 - Types
- **ACTIVITY**
- **PARKING**
- **TRANSIT**



Fields (cont)

- **TOID:** ID number of the accessory to which the virtual link leads
- **TOTYPE:**
 - Type of accessory to which the virtual link leads
 - Types: Same as FROMTYPE
- **DELAY:** The time delay incurred when traveling across the virtual link
- **COST:** The cost incurred when traveling across the virtual link
- **NOTES**

Validation

- IDs are unique
- "From" and "to" references are correct

Example

ID	FROMID	FROMTYPE	TOID	TOTYPE	DELAY	COST	NOTES
123	3003	TRANSIT	23	ACTIVITY	10	20	
124	24	ACTIVITY	1003	PARKING	30	40	



Pocket Lane Table



Description

- A pocket lane can be a:
 - Turn pocket
(a lane that starts after the from node and ends at the to node)
 - Pull-out
(a lane that starts after the from node and ends before the to node)
 - Merge pocket
(a lane that starts at the from node and ends before the to node).
- A lane starts at the "from" node and ends at the "to" node, is permanent (not a pocket lane)
- Cannot span more than one link
- Are numbered in sequence
(even if they do not exist for the full length of the link)
- Two way turns are not pocket lanes
- Location of pocket lane is determined by Link, Node, Offset, and Length



Fields

- **ID:** ID number of the pocket lane
- **NODES:** ID number of the "to" node
- **LINK:** ID number of the link on which the pocket lane lies
- **OFFSET:** Starting position of the pocket lane, measured from NODE
(applicable to pull-out pockets only)
- **LANE:** Lane number of the pocket lane
- **STYLE:**
 - Type of the pocket lane
 - Abbreviations:
 - * T = turn pocket
 - * P = pull-out pocket
 - * M = merge pocket
- **LENGTH:** Length of the pocket lane
- **NOTES**

Example

ID	NODE	LINK	OFFSET	LANE	STYLE	LENGTH	NOTES
85201	8520	12384	0	1	M	100	
85206	8520	12384	0	6	M	200	
85213	8521	12407	450	3	P	100	
141411	14141	28800	0	1	T	200	
141416	14141	28800	0	6	T	300	



Metro Pocket Lane Table

Attributes of Pocklanes.shp									
Shape	Length	Localid	Pocketside	Style	Zpktilanes	Towardnode	Offset	Comment	Pktilen_m
PolyLine	86.077	305736	L	T	1	88528	0		26.236
PolyLine	92.061	305459	R	T	1	87918	0		28.060
PolyLine	453.718	318336	2-WAY	T	0	0	0		138.293
PolyLine	954.502	317223	2-WAY	T	0	0	0		290.932
PolyLine	136.133	312807	R	T	1	81857	0		41.493
PolyLine	189.008	312760	L	T	1	81857	0		57.610
PolyLine	124.011	312760	R	M	1	81962	0		37.799
PolyLine	100.570	312852	L	T	1	82263	0		30.654
PolyLine	206.223	304209	L	T	1	84837	0	lane extends from previous link	62.857
PolyLine	95.256	304292	2-WAY	T	0	0	0		29.034
PolyLine	206.620	318253	R	T	1	85641	0		62.978
PolyLine	518.670	318253	L	T	1	85641	0		158.091
PolyLine	519.723	704775	R	MT	1	21069	0	lane extends from previous link	158.412
PolyLine	506.533	704777	R	MT	1	21348	0	lane extends from previous link	154.391
PolyLine	526.478	317789	R	M	1	88195	0	lane extends to next link	160.470
PolyLine	524.875	137290	R	M	1	800521	0	lane extends to next link	159.982
PolyLine	111.511	316441	L	T	1	95042	146		33.989
PolyLine	129.072	213152	R	M	1	76339	161		39.341
PolyLine	107.327	308799	L	T	1	94129	491		32.713
PolyLine	190.484	729919	R	T	1	19808	1061		58.060
PolyLine	118.570	317223	R	P	1	94464	1478		36.140
PolyLine	171.109	201353	R	T	1	38730	1595		52.154



Compare

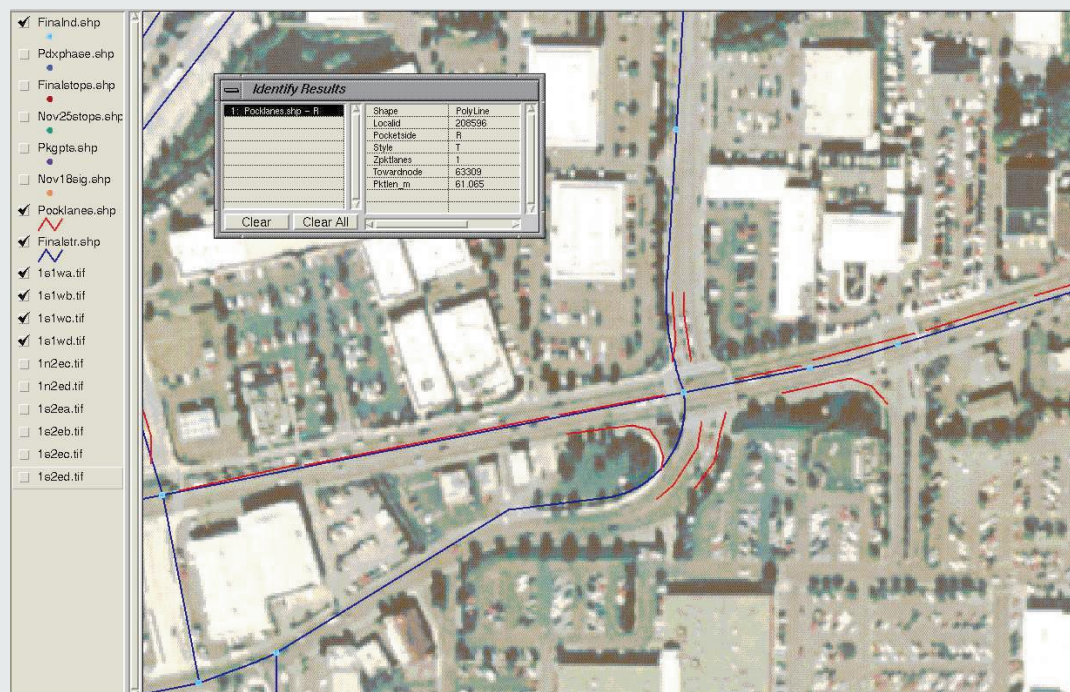
METRO FIELD	TRANSIMS FIELD	COMMENTS
Length	LENGTH	Some exceeded link length
Localid	LINK	
Pocketside	***	Important for Links table
Style	STYLE	Other styles included
Zpktlanes	***	
Towardnode	NODE	
Offset	OFFSET	Some exceeded link length, Only for pull-out pockets
Comment	NOTES	
***	LANE	
***	ID	

Validation

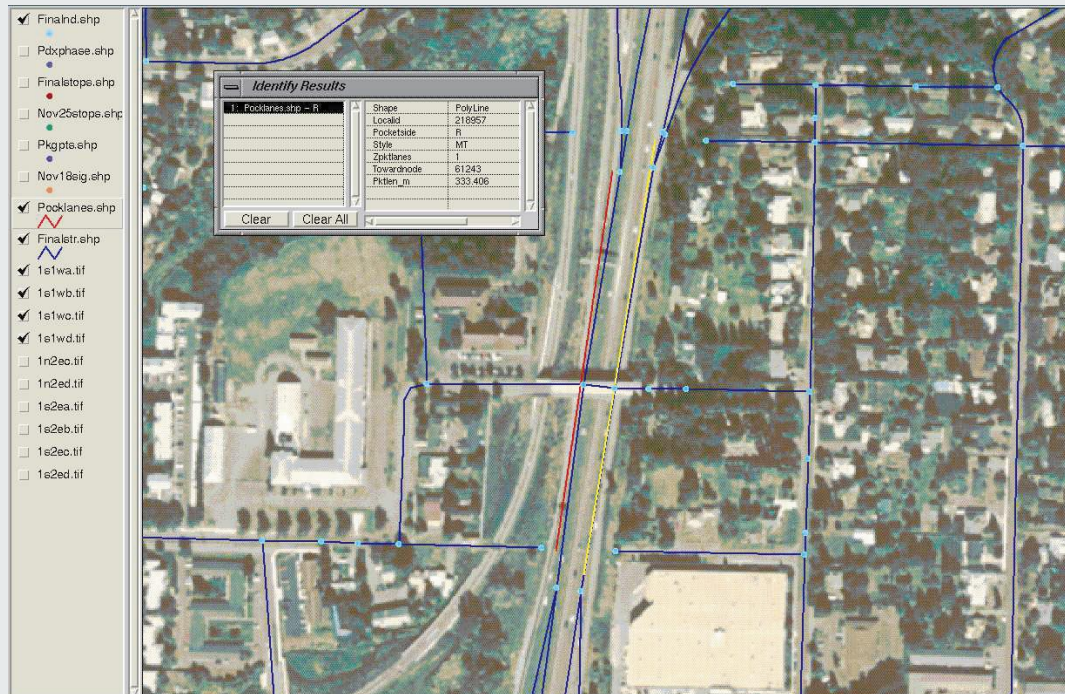
- IDs are unique
- Node and link references are correct
- Offset and length of the pocket lane are consistent with the link length
- Turn pockets and merge pockets always start or end at the appropriate limit line
- Offset of a pull-out lane does not equal zero
- None of the pockets overlap
- All of the pocket lanes are in the pocket lanes count in the links table
- The lane number for each pocket lane is correct



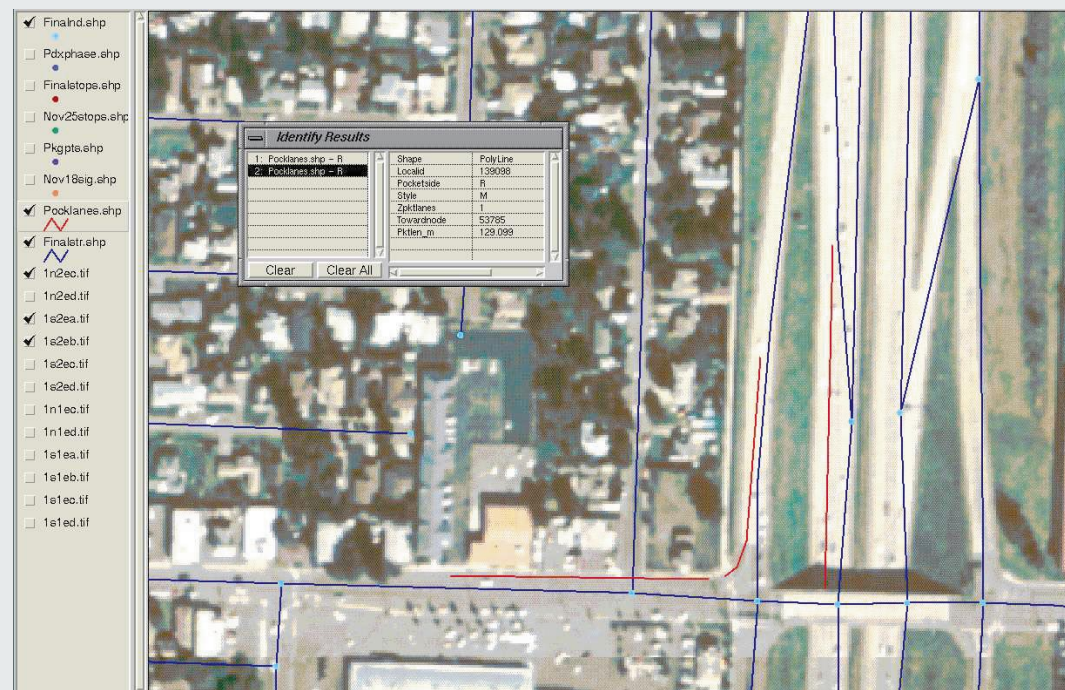
Pocket lanes: Turn pockets



Pocket lanes: Lane exceeding length of link



Pocket lanes: Turn and merge pockets



Transit Tables

Transit Terms

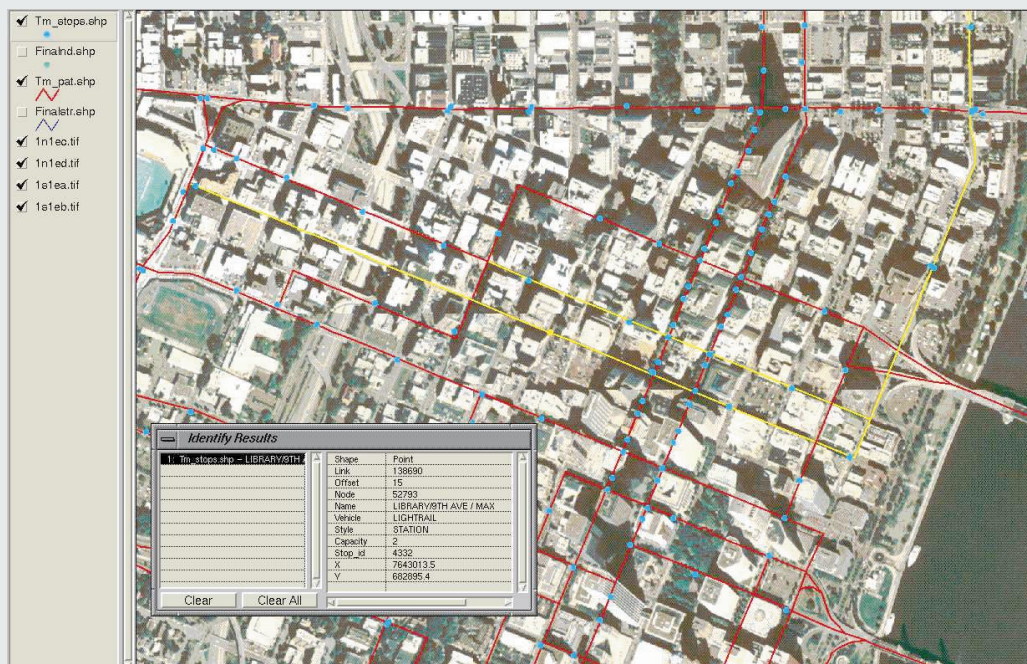
- **Transit:**
 - Consists of vehicles traveling on pre-specified routes
 - Has stops at specific locations listed in the Transit Stop network data table
 - Attempts to follow a predetermined schedule
 - Includes buses, light rail transit, trolleys, etc.
- **Route:**
 - Is a sequential set of transit stops
 - One route can't visit the same transit stop more than once
- Inbound and outbound portions of a round trip have different route IDs
- **Transit Stop:** An accessory defined in the Transit Stop table

Plan Terms (in relation to transit plans)

- **Plan:** Consists of a sequence of trips by one driver
- **Trip:**
 - Composed of a series of legs
 - Starts and ends at an activity location accessory
- **Leg:**
 - Describes a traveler's movement through the network
 - Must start and end at an accessory
 - Contains such information as departure time and route through the network



Transit stops



Transit Stop Table

Validation

- *IDs must be unique*
- *Node and link references must be correct*
- *Offset is consistent with link length*
- *Vehicle types allowed for the transit stop must be allowed on the link*

Fields

- *ID: ID number of the stop*
- *NAME: Name of the stop*
- *NODE: ID number of the "to" node*
- *LINK: ID number of the link on which the stop occurs*
- *OFFSET: Location of the stop, measured from NODE*
- *VEHICLE:*
 - *Types of vehicles for which this is a stop*
 - *Types*
 - *BUS = bus*
 - * *TROLLEY = trolley*
 - * *STREETCAR = streetcar*
 - * *LIGHTRAIL = light rail transit*
 - * *RAPIDRAIL = rail rapid transit*
 - * *REGIONRAIL = regional rail*



Fields (cont)

- *STYLE:*
 - *Type of the stop*
 - *Types*
 - * *STOP = transit stop*
 - * *STATION = transit station*
 - * *YARD = vehicle storage lot*
- *CAPACITY: Number of vehicles the stop can simultaneously handle*
- *NOTES*

Example

ID	NAME	NODE	LINK	OFFSET	VEHICLE	STYLE	CAPACITY	NOTES
3001	1st & C NE	8525	2759	400	BUS	STOP	25	
3002	1st & C SW	8525	2758	350	BUS/LIGHTRAIL	STATION	0	
3003	1st & B	8524	2757	650	LIGHTRAIL	YARD	0	
3004	4th & A	8610	2755	600	LIGHTRAIL	STOP	200	
3005	4th & C	14142	2752	650	BUS/LIGHTRAIL	STATION	0	
3006	3rd & D	14340	2750	400	BUS	STOP	1	



Metro Transit Stops

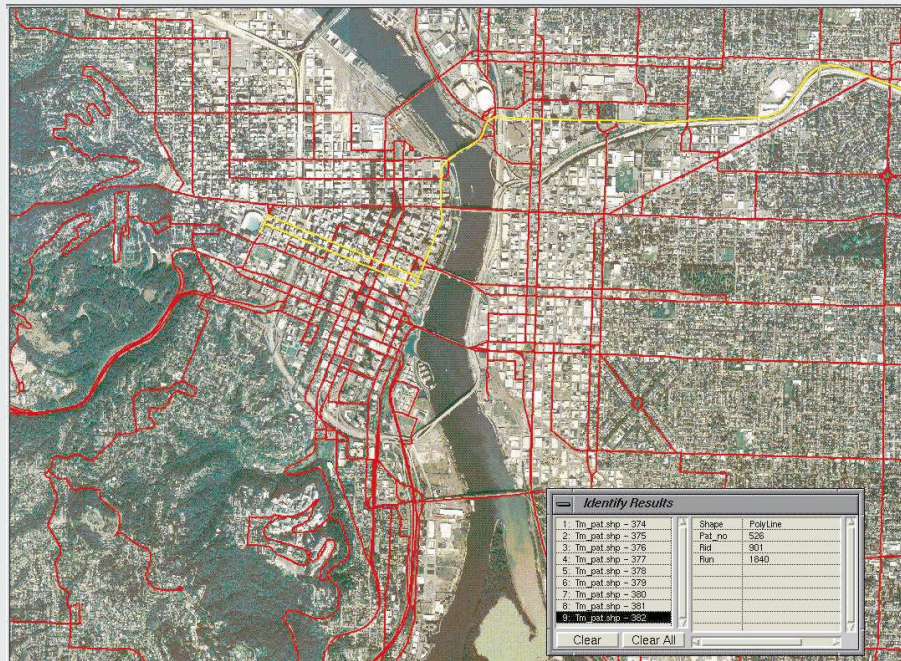
Attributes of Tm_stops.shp									
Shape	Link	Offset	Node	Name	Vehicle	Style	Capacity	Stop_id	
Point	106472	15	37332	15TH / JARRETT	BUS	STOP	2	528	
Point	106586	15	37781	KILLINGSWORTH / 35TH	BUS	STOP	2	537	
Point	112221	15	46896	HALSEY / 104TH	BUS	STOP	2	1237	
Point	121352	234	61337	GRESHAM CENTRAL TC / MAX	LIGHTRAIL	STATION	2	2462	
Point	122195	633	61943	CLEVELAND AVENUE / MAX	LIGHTRAIL	STATION	2	2569	
Point	122860	15	63030	DEADHEAD / END CENTER	BUS	YARD	2	2646	
Point	133948	203	39769	125TH PL / RIVERWOOD 20	BUS	STOP	2	3665	
Point	138602	15	52598	15TH / SALMON	BUS	STOP	2	4319	
Point	138814	15	52944	5TH AVENUE/MALL / MAX	LIGHTRAIL	STATION	2	4352	
Point	141151	15	63379	CORBETT / BANCROFT	BUS	STOP	2	4587	
Point	171237	190	63040	DEADHEAD / END POWELL	BUS	YARD	2	4991	
Point	200690	163	36894	SPRINGVILLE / 178TH	BUS	STOP	2	5012	
Point	213130	15	75916	MURRAY / WEIR RD	BUS	STOP	2	6112	
Point	221482	475	57368	DEADHEAD / END MERLO	BUS	YARD	2	6625	
Point	304238	65	84894	DATFIELD / OAKLAND	BUS	STOP	2	6987	
Point	317306	95	79208	MCCLOUGHLIN / 26TH	BUS	STOP	2	7610	
Point	900228	405	900228	EASTMAN / #670 TOWNFAIR	BUS	STOP	2	8119	

Compare

METRO FIELD	TRANSIMS FIELD	PROBLEMS
Pat_no	***	
Rid	TRANSIT ROUTE ID	
Run	***	May use in place of RID
***	LIST of TRANSIT STOP IDs	Must be in order visited



Transit routes



Transit Route File

Description

- Contains the order of transit stops encountered for each route

Format

- An ASCII text file whose fields are separated by white space
- The column names are not part of the data file

Fields

- Transit Route ID:** ID for a route
- Number of Stops:** Number of stops used by a route
- List of Transit Stop Ids:** IDs of the transit stops in route (in order encountered)

Example

```

1 5
5
6
7
8
9
2 6
8
9
6
7
4
5
8 2
92
70
9 2
68
69
10 2
92
70
    
```



Metro transit route table

Attributes of Tm: pat.shp			
Shape	Pat_no	Rid	Run
PolyLine	8	10	1370
PolyLine	4	10	1400
PolyLine	1	11	1005
PolyLine	11	11	1370
PolyLine	13	11	1380
PolyLine	39	40	1010
PolyLine	25	40	1130
PolyLine	21	40	1700
PolyLine	29	41	1010
PolyLine	22	41	1660
PolyLine	33	41	1680
PolyLine	35	41	1740
PolyLine	49	50	1560

Compare

METRO FIELD	TRANSIMS FIELD	COMMENTS
Pat_no	***	
Rid	TRANSIT ROUTE ID	
Run	***	May use RUN in place of RID
***	LIST of TRANSIT STOP IDs	



Transit Schedule File

Description

- Contains the times the vehicles arrive at the transit stops

Format

- File must be sorted by Vehicle ID, Transit Route ID, and time (in that order)

Fields

- VEHICLE ID
 - Are defined in the vehicle file
 - Must not be the same as a traveler vehicle id number (i.e., > 10 million)
- TRANSIT ROUTE ID: A unique identifier a route
- TIME: Arrival time at the stop
- LINK ID: IDs of the link on which the transit stop resides
- DESTINATION NODE ID: ID of "to" node
- TRANSIT STOP ID: ID of transit stop



Example

VEHICLEID	TRANSROUTEID	TIME	LINKID	DESTNODE	TRANSSTOPID
10000002	11	25577	104350	35169	55
10000002	11	25610	104066	34831	56
10000054	1041	48527	140455	57789	9817
10000054	1041	48559	140276	57180	9818
10000049	40	49020	139231	53733	4433
10000049	40	49098	139231	53733	4433
10000049	40	49172	139231	53733	4433
10000049	40	49248	139231	53733	4433
10000351	1091	62179	123095	63206	10122
10000351	1091	62197	123095	63206	10123
10000462	1121	21288	110288	42460	10478
10000462	1121	21331	110395	42719	10479
10000462	1121	21360	110395	42719	10479
10000462	1121	21417	110706	43376	10481
10000462	1121	21467	110869	43817	10482

Metro Transit Schedule Table

Train	Route	Rte	Rte_desc	Dir	Rid	Run	Pattern	Loc_cd	Stop_time	Timept	Stop_id	Recno
101	1G	1	GREELEY	1	11	1060	1	1	25560	1	300	1
101	1G	1	GREELEY	1	11	1060	1	1	25577	0	299	2
101	1G	1	GREELEY	1	11	1060	1	1	25610	0	263	3
101	1G	1	GREELEY	1	11	1060	1	1	25642	0	250	4
101	1G	1	GREELEY	1	11	1060	1	2	25679	0	231	5
101	1G	1	GREELEY	1	11	1060	1	1	25722	1	214	6



Compare

METRO FIELD	TRANSIMS FIELD	COMMENTS
Train	***	
Route	***	
Rte	***	
Rte_desc	***	
Dir	***	
Rid	TRANSIT ROUTE ID	
Run	***	May use in place of RID
Pattern	***	
Loc_od	***	
Stop_time	TIME	
Timept	***	
Stop_id	TRANSIT STOP ID	
Recno	***	
***	VEHICLE ID	Must assign in VEHICLE FILE, BUS DRIVER PLANS
***	LINK ID	Can get from TRANSIT STOP TABLE
***	DESTINATION NODE ID	Can get from TRANSIT STOP TABLE



Bus Driver Plans

Description

- Contains the routes traveled by a transit vehicle
- NOTE:** If a driver completes more than one pass of a route, each route must be contained in the driver's plan file

Fields

- Traveler (Transit Driver) ID:** Each driver will have a unique ID
- User Field:** User defined (not required)
- Trip ID:**
 - Numbers the trips for the traveler sequentially from 1
 - For transit, would be starting a yard and ending at a yard
- Leg ID:**
 - Numbers the legs within a trip sequentially from 1
 - Legs can be divided up by breaks, lunch, etc.
- Activation Time:** Time the transit driver leaves the starting point
- Start Accessory ID:** Accessory ID of the starting location for this leg
- Start Accessory Type:** Transit Stop = 3
- End Accessory ID:** Accessory ID of the ending location for this leg
- End Accessory Type:** Transit Stop = 3



Fields (cont)

- **Duration:** How long this leg is expected to take
(with Stop Time and Max Time Flag)
- **Stop Time:** Absolute ending time for this leg
(with Stop Time and Max Time Flag)
- **Max Time Flag:** Determines if the amount of time allotted for a trip (start time + duration or stop time)
- **Driver Flag:** True, since the traveler is driving a vehicle on this leg
- **Mode:** Mode of travel (transit = 1)
- **Vehicle Type:** Type of vehicle (bus = 5 and light rail = 8)
- **Number of Tokens:** Number of tokens in the mode-dependent data
(2 + # of nodes)

Mode-Dependent Data Fields

- **Vehicle ID:** Vehicle IDs are defined in the vehicle file
- **Route ID:** Specified in the transit route file
- **List of Node IDs:** The nodes (in order) through which the driver's route will pass



Format

- Contains a series of records, each of which specifies a single leg of a traveler's trip
- Fields separated by white space
- Field names are not written in the data file
- There is a blank line separating each pair of records
- Format based on Plan Data Definitions and Format (Table 7) and Mode-dependent Data for a Transit Driver (Table 10)

Example

```
1 0 1 1
31800 58450 2 21531 2
47460 79260 1
1 1 5
13
10000001 10
1 2 3 4 5 6 7 8 9
10 11

2 0 1 1
25277 21531 2 58480 2
48223 73500 1
1 1 5
15
10000002 11
55 56 57 58 59 60 61 62 63
64 65 66 67
```



Vehicle IDs for Transit

Definition

- *Is a data base that contains a list of all vehicles (drivers) on the network*
- *Transit vehicles must be included in the vehicle database*
- *Vehicle IDs assigned must be unique (not same as autos, trucks, etc.)*

Format

- *Fields must be tab- or space-delimited*
- *Contains only transit vehicles*
- *Travelers generated by simulation are added to file by the program*

Fields

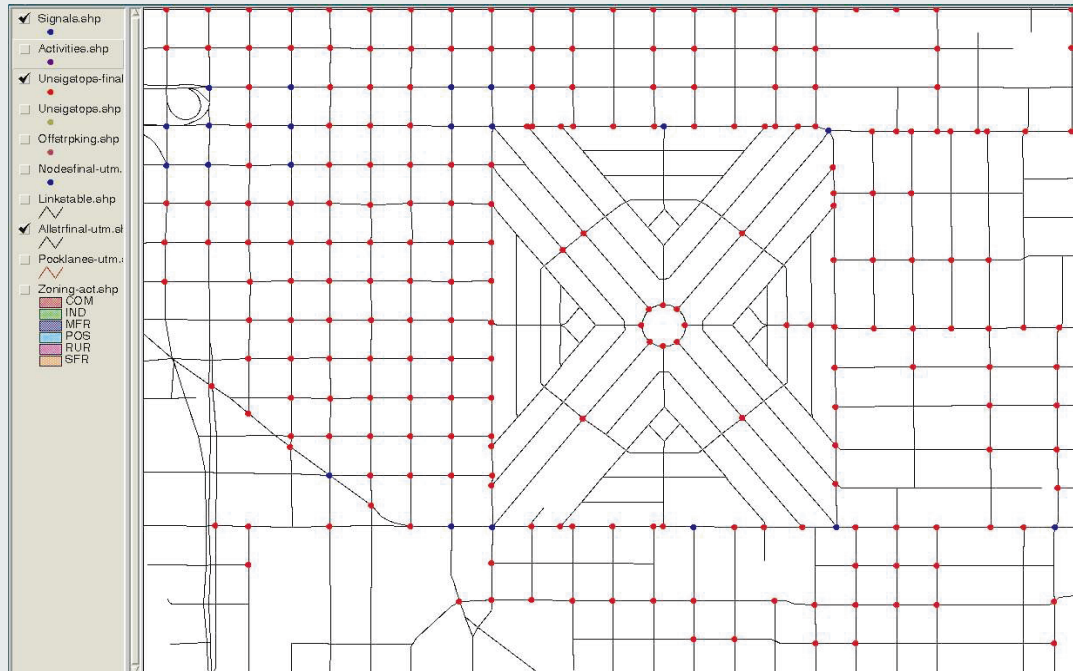
- *Household ID*
- *Vehicle ID (i.e., < 10 million)*
- *ID of the starting location*
- *TRANSIMS network type of the vehicle (Bus = 5 and Light rail = 8)*

Example

```
1460 500100 78 1 10  
1460 500101 78 1 10
```



Unsignalize Nodes



Unsignalized Node Table

Definition

- Represents the type of sign control, if any, that is present
- Examples: stop and yield signs
- All nodes without a signal are included in this table

Fields

- **NODE:** ID number of the node
- **INLINK:** ID number of the incoming link
- **SIGN**

- Type of sign control on the link
- Types

- * S = stop
- * Y = yield
- * N = none



Example

NODE	INLINK	SIGN	NOTES
8520	12384	Y	
8520	28800	N	
14136	12407	S	
14136	12384	N	
14136	28804	N	
8610	2753	N	
8610	2755	N	
14142	2753	N	
14142	11486	S	
14142	2752	N	
8608	2751	N	
8608	2752	N	
8600	2756	N	
8600	2754	S	
8600	2755	N	

Metro Unsignalized Node Table

Attributes of Finalstops.shp				
Shape	Localid	Node	Type	Comment
Point	137952	50376	Stop Sign	
Point	112000	45953	Flasher (red)	
Point	113485	49948	Stop Sign	
Point	160871	36029	Flasher (yellow)	
Point	106219	37397	Yield	
Point	702378	23131	Flasher (yellow)	
Point	137941	50387	Stop Sign	
Point	137947	50387	Stop Sign	

Compare

METRO FIELD	TRANSIMS FIELD	COMMENTS
Localid	LINK	Node and link combination which shows location did not always match Links Table
Node	NODE	
Type	SIGN	Does not include nodes with no signs
Comment	NOTES	



Signals



Signalized Node Table

Definition

- Represents a traffic light
- Has a timing plan and a phasing plan
- Location is determined by node reference

Fields

- **NODE:** ID number of the node
- **TYPE:**
 - Type of the signal
 - Types
 - * T = timed
 - * A = actuated
- **PLAN:** ID number of a timing plan
- **OFFSET:** Relative offset (in seconds) for coordinated signals
- **STARTTIME:**
 - Starting time for the plan
 - Format: Day of the week followed by the time of day (on a 24-hour clock)
 - Example: 'WKD13:20' is any weekday at 1:20 in the afternoon
 - Abbreviations: Same as previous examples



Fields (cont)

- **COORDINATR:** NODE ID
- **RING:**
 - Single or dual ring, required only for TYPE = A
 - Types
 - * S = single
 - * D = dual
- **NOTES**

Validation

- Node and plan references must be correct
- Each node will one control (signalized or unsignalized)

Generalized Signalized Nodes

- Currently attempting to simulate actuated signals
- May be utilized
 - In areas where a signal is present, but no data is available
 - In place of all signals

Example

NODE	TYPE	PLAN	OFFSET	STARTTIME	COORDINATR	RING	NOTES
14141	T	1	19	ALL0000	0	S	
8521	A	2	0	ALL1800	0	S	
8523	A	3	0	WED0700	0	S	



Metro signalized node table

Attributes of Nov18sig.shp							
Shape	Id	Address	Owner	Type	Source	Stype	Node_id
Point	0	SR-500 / NE ANDRESEN RD	WDOT		WDOT	Signal	900170
Point	174	SCHOLLS FERRY RD / HEATHER LN	WASHCO	PED-ACTIVATED	WASHCO	Pedestrian Crossing	70991
Point	104	W 39TH ST / W COLUMBIA ST	VANC		VANC	Signal	22030
Point	6016	SW 5TH AVE / W BURNSIDE ST	PORT	TRAFFIC	PORT	Signal	50897
Point	2607	NE 68TH AVE / NE PRESCOTT ST	PORT	PEDESTRIAN	PORT	Pedestrian Crossing	39435
Point	2227	NE 30TH AVE / NE BROADWAY ST	PORT	TRAFFIC	PORT	Signal	45481
Point	2603	NE 12TH AVE / NE BROADWAY ST	PORT	PEDESTRIAN	PORT	Pedestrian Crossing	45347

Compare

METRO FIELD	TRANSIMS FIELD	COMMENTS
(Signal) Id	***	Not used because IDs aren't unique
Address	***	
Owner	***	
Type	***	
Source	***	
Stype	***	
Node_id	NODE	
***	TYPE	
***	PLAN	From Timing Plan Table
***	OFFSET	
***	STARTTIME	
***	COORDINATR	From Coordinator Table
***	RING	
***	ENTRY	
***	NOTES	

NOTE: Empty fields due to lack of available information



Phasing Plan Table

Definition

- Specifies the turn protection in effect from an incoming to an outgoing link
- Protection only during a particular phase of a specific timing plan
- The same turn can be protected or unprotected during different phases and plans

Fields

- **NODE:** ID number of the node
- **PLAN:** ID number of the timing plan
- **PHASE:** Phase number
- **INLINK:** ID number of the incoming link
- **OUTLINK:** ID number of the outgoing link
- **PROTECTION:**
 - Movement protection indicator
 - Types
 - * P = protected
 - * U = unprotected
 - * S = unprotected after stop
- **NOTES**



Validation

- Plan, phase, node, and link references must be correct
- Phase is associated with the node listed

Example

NODE	PLAN	PHASE	INLINK	OUTLINK	PROTECTION	NOTES
14141	1	1	11487	11495	U	
14141	1	1	11487	28800	P	
14141	1	1	11495	11487	U	
14141	1	1	11495	11486	P	
14141	1	1	11486	11487	S	
14141	1	1	28800	11495	S	
14141	1	2	11487	28800	P	
14141	1	2	11495	11486	P	
14141	1	2	11486	11495	P	
14141	1	2	28800	11487	P	
14141	1	2	28800	11495	S	
14141	1	2	11486	11487	S	
14141	1	3	11487	28800	P	
14141	1	3	28800	11487	P	
14141	1	3	28800	11486	U	
14141	1	3	28800	11495	P	
14141	1	3	11495	11486	S	
14141	1	3	11486	11487	S	



Metro phasing plan table

Attributes of Pdxphase.shp						
Shape	Signalid	Phasenum	Inlink	Outlink	Code	Record
Point	5231	1+4	138647	138508	0	1746
Point	5230	6	139467	139344	0	1747
Point	5230	2	139344	139467	0	1748
Point	5230	1+4	139467	139345	0	1749
Point	5250	3	150995	pr n	0	1750
Point	5250	3	150995	150974	0	1751
Point	5250	6	150994	150974	0	1752
Point	5250	1	150974	150994	0	1753
Point	5250	1	150974	pr n	0	1754
Point	5250	3+2	150974	150995	0	1755
Point	5250	4	pr n	150995	0	1756

METRO FIELD	TRANSIMS FIELD	COMMENTS
Signalid	***	Not used because IDs aren't unique, Can't determine location from signal ID
Phasenum	PHASE	
Inlink	INLINK	Not all records were assigned a link
Outlink	OUTLINK	Not all records were assigned a link
Code	***	Included because of empty inlink and outlink records
***	NODE	Needed for location purposes
***	PLAN	From Timing Plan Table
***	PROTECTION	
***	NOTES	

Compare



Timing Plan Table

Definition

- Specifies the lengths of the intervals (i.e., green, yellow, red)
- Nodes (signals) can have the same timing plan
- Used for both pre-timed and actuated signals

Fields

- PLAN: ID number of a timing plan
- PHASE: Phase number
- NEXTPHASES: Phase number(s) of the next phase(s) in sequence
- GREENMIN: Minimum length of the green interval, or fixed green length for timed signal
- GREENMAX: Maximum length of the green interval.
- GREENEXT: Length of the green extension interval
- YELLOW: Length of the yellow interval
- REDCLEAR: Length of the red clearance interval
- GROUPFIRST:
 - For pre-timed or single ring: 1 if first phase, 0 if not first phase
 - For dual ring: Number of phase group for which this phase is first phase
- NOTES



Validation

- The (plan, phase) pairs must be unique
- Time values are consistent
- Phase sequence references existent phases

Example

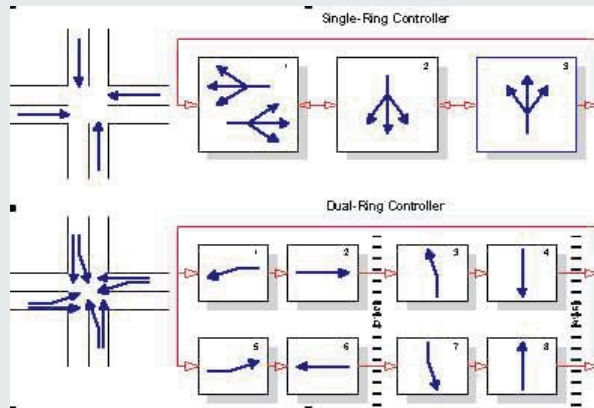
PLAN	PHASE	NEXTPHASES	GREENMIN	GREENMAX	GREENEXT	YELLOW	REDCLEAR	GROUPFIRST	NOTES
1	1	2	15	0	0	*	0	1	
1	2	1	5	0	0	1	0	0	
1	1	*	5	0	0	1	0	0	
1	*	2	15	0	0	*	0	0	
1	2	6	0	0	0	1	0	0	
1	6	1	1	0	0	1	0	0	
2	1	2	15	10	*	1	0	1	
2	2	1	10	10	*	1	0	0	
1	1	2	15	10	*	1	1	1	
1	2	1	*	5	1	1	0	0	
1	1	1	10	30	*	1	1	0	



Detector Table

Definition

- Is a device that identifies the presence or passage of a vehicle over an area of the lanes on a link
- Used for signal timing
- Location (perimeter) is defined by offset, lanebegin, laneend, and length



Note: Along with actuated signals, detectors may also be simulated



Fields

- **ID:** ID number of the detector
- **NODE:** ID number of "to" node
- **LINK:** ID number of the link on which the detector lies
- **OFFSET:** Starting position of the detector, measured from NODE
- **LANEBEGIN:** Lane number of lane at which the detector begins
- **LANEEND:** Lane number of lane at which the detector ends
- **LENGTH:** Length of the detector
- **STYLE:**
 - Type of the detector
 - Types:
 - * **PRESENCE** = sense vehicles on detector
 - * **PASSAGE** = sense vehicles crossing detector
- **COORDINATR:** NODE ID
- **NOTESValidation**
- **IDs are unique**
- **Node, link, and lane references must be correct**
- **Offset and length are consistent with link length**

Example

ID	NODE	LINK	OFFSET	LANEBEGIN	LANEEND	LENGTH	STYLE	COORDINATR	NOTES
5001	14142	2753	250	1	1	3	PASSAGE	1000	
5002	14142	11486	250	1	3	3	PRESENCE	1000	
5005	14142	2752	300	1	2	3	PASSAGE	1000	



Coordinator Table

Definition: *Is a device that controls the operation of one or more traffic controls*

Note: *Is attempting to be simulated, along with signals and detectors*

Example

Column Name	Description	Allowed Values
ID	ID number of the signal coordinator.	integer: 1 through 2,147,483,647
TYPE	Type of coordinator.	ten characters: values to be determined
ALGORITHM	Control algorithm used by coordinator.	ten characters: values to be determined
NOTES	Character string used for data quality annotations; free format (may be blank).	255 characters



Turn Prohibition Table

Definition: Lists when particular movements (i.e., turns) at a node are prohibited only at certain times of the day

Fields

- **NODE:** ID of the node
- **INLINK:** ID number of the incoming link
- **OUTLINK:** ID number of the outgoing link
- **STARTTIME**
 - **Format:** Day of the week followed by the time of day (on a 24-hour clock)
 - **Example:** 'WKD13:20' is any weekday at 1:20 in the afternoon
 - **Abbreviations:** same as previous
- **ENDTIME:** Ending time for the prohibition (same format as STARTTIME)
- **NOTES**

Example

NODE	INLINK	SIGN	NOTES
8520	12384	T	
8520	28890	H	
14136	12402	S	
14136	12384	H	
14136	28894	H	
8610	2753	H	
8610	2755	H	
14142	2753	H	
14142	11486	S	
14142	2752	H	
8608	2751	H	
8608	2752	H	



Speed Table



Description

- Contains speed information for with different speed limits
- Limits based on the time of day and/or vehicle types
- Speeds in this table supersede Link Table default speed limits

Fields

- **LINK:** ID number of the link
- **NODE:** ID of the node the "to" node
- **SPEEDLMT:** Speed limit for vehicles
- **FREESPD:** Free-flow speed for vehicles
- **VEHICLE:** Vehicle type(s) to which speeds apply
- **STARTTIME**
 - **Format:** Day of the week followed by the time of day (on a 24-hour clock)
 - **Example:** 'WKD13:20' is any weekday at 1:20 in the afternoon
 - **Abbreviations:** Same as previous
- **ENDTIME:** Ending time for the speeds (same format as STARTTIME)
- **NOTES**



Validation

- Field names and types are correct
- Data values are in the legal ranges
- Node and link references are correct
- Vehicle types are consistent with the vehicle types allowed on the link



Example:

LINK	NODE	SPEEDLMT	FREESPD	VEHICLE	STARTTIME	ENDTIME	NOTES
2758	8524	15	20	BUS	ALL00:00	ALL24:00	
2758	8525	15	18	BUS	ALL00:00	ALL24:00	



Lane Use Table

Description

- Only required when a lane has vehicle type restrictions
- If not included in this table, vehicles from the link table have unrestricted use of a lane
- Node, link, and lane references must be correct



Fields

- ID: ID number of the link
- NODE: ID number of "to" node
- LINK: ID number of the link
- LANE: Lane number
- VEHICLE:
 - * Vehicle type(s) to which restriction applies
 - * Abbreviations:
 - HOV2 = high occupancy vehicle with two or more occupants
 - HOV3 = high occupancy vehicle with three or more occupants
 - HOV4 = high occupancy vehicle with four or more occupants
 - BICYCLE = bicycle
 - AUTO = private auto
 - TRUCK = motor carrier
 - BUS = bus



Fields (cont.)

- **VEHICLE:**

- * *Vehicle type(s) to which restriction applies*
- * *Format: string of characters separated by slashes*
- * *Abbreviations:*
 - TROLLEY = trolley
 - STREETCAR = streetcar
 - LIGHTRAIL = light rail transit
 - RAPIDRAIL = rail rapid transit
 - REGIONRAIL = regional rail

- **RESTRICT:**

- * *Type of lane restriction*
- * *Abbreviations:*
 - O = only this vehicle type may use lane
 - R = lane required to be used by this vehicle type
 - N = lane not allowed to be used by this vehicle type

- **STARTTIME:**

- * *Starting time for the restriction.*
- * *Format: Day of the week followed by the time of day (on a 24-hour clock)*
- * *Example: 'WKD13:20' is any weekday at 1:20 in the afternoon*
- * *Abbreviations: Same as shown previously*

- **ENDTIME:** Ending time for the restriction

- **NOTES**



Example

NODE	LINK	LANE	VEHICLE	RESTRICT	STARTTIME	ENDTIME	NOTES
8606	2757	2	AUTO/HOV3	O	ALL00:00	ALL24:00	
8524	2757	1	LIGHTRAIL	R	ALL00:00	ALL24:00	
8524	2758	1	LIGHTRAIL	R	ALL00:00	ALL24:00	
8524	2758	2	AUTO	R	ALL00:00	ALL24:00	
8525	2758	1	AUTO	N	ALL00:00	ALL24:00	
8525	2758	2	LIGHTRAIL	N	ALL00:00	ALL24:00	
8606	2756	1	LIGHTRAIL	R	ALL00:00	ALL24:00	
8600	2756	1	LIGHTRAIL	R	ALL00:00	ALL24:00	
8600	2755	2	LIGHTRAIL	N	ALL00:00	ALL24:00	
8610	2755	1	LIGHTRAIL	R	ALL00:00	ALL24:00	
14142	2752	1	LIGHTRAIL	R	ALL00:00	ALL24:00	
14142	2752	2	AUTO	R	ALL00:00	ALL24:00	
8608	2752	1	AUTO	N	ALL00:00	ALL24:00	
8608	2752	1	LIGHTRAIL	R	ALL00:00	ALL24:00	



Barrier Table

Description

- *Is a divider that prevents vehicles from moving between two adjacent lanes on a link*
- *Includes a curb or grade separation*

Fields

- *ID: ID number of the barrier*
- *NODE: ID number of "to" node*
- *LINK: ID number of the link on which the barrier lies*
- *OFFSET: Starting position of the barrier, measured from NODE*
- *LANE: Lane number of lane to the left of the barrier*
- *STYLE:*
 - *Type of the barrier*
 - *Abbreviations*
 - * *CURB = curb*
 - * *BARRIER = barrier*
 - * *GRADESEP = grade separation*
 - * *STRIPE = painted stripe*
 - * *TEMPORARY = temporary barrier*
- *LENGTH: Length of the barrier*
- *NOTES*



Validation

- *IDs are unique*
- *Node, link, and lane references must be correct*
- *Offset and length are consistent with link lengths*

Example

ID	NODE	LINK	OFFSET	LANE	STYLE	LENGTH	NOTES
9001	8600	2756	450	1	BARRIER	200	

